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MIND AND MEMORY TRAINING

BY

ERNEST E. WOOD

FORMER PRINCIPAL OF THE D. G. SIND NATIONAL
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SECOND EDITION



LONDON
SIR ISAAC PITMAN & SONS, LTD.

1945

First Edition, . 1936
Second Edition . 1939
Reprinted . . 1945

SIR ISAAC PITMAN & SONS, LTD.
PITMAN HOUSE PARKER STREET, KINGSWAY, LONDON, W.C.2
THE PITMAN PRESS, BATH
PITMAN HOUSE, LITTLE COLLINS STREET, MELBOURNE
UNITED BUILDING, RIVER VALLEY ROAD, SINGAPORE
27 BECKETTS BUILDINGS, PRESIDENT STREET, JOHANNESBURG

ASSOCIATED COMPANIES

PITMAN PUBLISHING CORPORATION
2 WEST 45TH STREET, NEW YORK
205 WEST MONROE STREET, CHICAGO

SIR ISAAC PITMAN & SONS (CANADA), LTD.
(INCORPORATING THE COMMERCIAL TEXT BOOK COMPANY)
PITMAN HOUSE, 381-383 CHURCH STREET, TORONTO



THE PAPER AND BINDING OF
THIS BOOK CONFORM TO THE
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PREFACE

THIS book is the result of over thirty years' experience and study of the memory systems of Europe and India.

The author, as an educationist of eminence and long standing—with the founding of two University Colleges also to his credit—has had uncommon opportunities for observation of the ways of the mind, and he has pursued his quarry with all the keenness of a naturalist who stalks the denizens of the wild in order to note and record their habits.

He wishes to deprecate the frequent criticism that memory systems are unnatural or artificial. On the contrary, such as are described here follow the spontaneous processes of the mind found in people who have naturally good memories.

He desires to acknowledge with thanks to Messrs. Ganesh and Co., Madras, and to The Theosophical Publishing House, Madras, the use herein of various extracts from writings of his published by them several years ago.

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SECTION I

THE MIND AND ITS MANAGEMENT

MIND AND MEMORY TRAINING

CHAPTER I

THE MAGIC BOX

IMAGINE yourself to be standing with a party of friends in some Oriental market-place, or in a palace garden. *Enter*, a conjurer with a magic box. The strange man spreads a square of cloth upon the ground, then reverently places upon it a coloured box of basket-work, perhaps eight inches square. He gazes at it steadily, mutters a little, removes the lid, and takes out of it, one by one, with exquisite care, nine more boxes, which seem to be of the same size as the original one, but are of different colours.

You think that the trick is now finished. But no; he opens one of the new boxes and takes out nine more; he opens the other eight and takes nine more out of each—all with Oriental deliberation. And still he has not done; he begins to open up what we may call the third generation of boxes, until before long the ground is strewn with piles of them as far as he can reach. The nine boxes of the first generation and the eighty-one boxes of the second generation have disappeared from sight beneath the heaps. You begin to think that this conjurer is perhaps able to go on for ever—and then you call a halt, and open your purse right liberally.

I am taking this imaginary conjuring entertainment as a simile to show what happens in our own minds. Something in us which is able to observe what goes on in the mind is the spectator. The field of imagination in the mind itself may be compared to the spread cloth. Each idea that rises in the

mind is like a magic box. Something else in us which is able to direct the ideas in the mind is the conjurer. Really the spectator and the conjurer are one "something" which we are, but I will not now attempt to define that something because our present object is not to penetrate the deep mysteries of psychology, but to see what we can do to make ourselves better conjurers, able to produce our boxes quickly—more boxes, better boxes, boxes which are exactly of the kind needed for the business of thinking which at any given time we may wish to do.

Although all minds work under the same laws, they do so in different degrees of power and plenty. Some work quickly, others slowly; some have much to offer, others little. Several students may be called upon to write an essay on the subject of cats. Some of them will find their thoughts coming plentifully forward from the recesses of the mind, while others will sit chewing the ends of their pens for a long time before their thoughts begin to flow.

Some minds are brighter than others, and you want yours to be bright and strong. You want to think of many ideas and to think them well. You want to think all round any subject of your consideration, not only on one side of it, as prejudiced or timid thinkers do.

While you are making the mind bright, however, care must be taken to avoid the danger that besets brilliant minds everywhere. The quick thinker who is about to write upon some social subject, such as that of prison reform or education, will find thoughts rapidly rising in his mind, and very often he will be carried away by some of the first that come, and he will follow them up and write brilliantly along the lines of thought to which they lead. But probably he will miss something of great importance to the understanding of the matter, because he has left the central subject of thought before he has considered it from every point of view.

As an example of this, a chess player, captivated by some

daring plan of his own, will sometimes forget to look to his defences, and will find himself the subject of sudden disaster. Sometimes a duller mind, or at any rate a slower one, will be more balanced and will at last come nearer to the truth.

So, while you do want a quick mind, not one that is hard to warm up like a cheap motor-car engine on a cold winter's morning, you do not want one that will start with a leap and run away with you, but one that will dwell long enough on a chosen subject to see it from every point of view, before it begins the varied explorations of thought in connexion with it that it should make upon different lines.

If I follow up the analogy of an engine, we require three things for the good working of our mental machinery—cleaning, lubrication, and control.

CHAPTER II

THE ROADS OF THOUGHT

CONTROL of the subject-matter and the direction of movement of our thought is often called concentration. Let us try a preliminary experiment to see exactly what this means.

Sit down in some quiet place by yourself, and set before the mind an idea of some common object. Watch it carefully and you will soon find that it contains many other ideas, which can be taken out and made to stand around it—or perhaps you will find that they leap out incontinently and begin to play about.

Let us suppose that I think of a silver coin. What do I find on looking into this box? I see an Indian rupee, a British shilling, an American “quarter.” I see coins round and square, fluted and filleted, small and large, thick and thin. I see a silver mine in Bolivia and a shop in Shanghai where I changed some silver dollars. I see the mint in Bombay (which I once visited) where coins of India are made; I see the strips of metal going through the machines, the discs punched out, the holes remaining.

Enough, I must call a halt, lest this fascinating conjurer go on for ever. That he could not do, however, but if I permit him he will open many thousands of boxes before he exhausts his powers. He will soon come to the end of the possibilities of the first box, but then he can open the others which he has taken from it.

It is the peculiarity to some minds—of the wandering and unsteady kind—to open another box before they have taken everything out of the first. That is not concentration, but mind-wandering. Concentration on an idea means that you will completely empty one box before you turn away from

it to open another. The value of such practice is that it brightens up the mind and makes it bring forth ideas on a chosen subject quickly and in abundance.

There is a reason why a given box should become exhausted. It is that the ideas which come out of it do not do so at random but according to definite laws ; they are chained to it, as it were, and only certain kinds can come out of a certain kind of box.

Suppose, for example, someone mentions the word "elephant" in your hearing. You may think of particular parts of the animal, such as its large ears or its peculiar trunk. You may think of its intelligence and its philosophical temperament, or of particular elephants that you have seen or read about. You may think of similar animals, such as the hippopotamus or the rhinoceros, or of the countries from which elephants come. But there are certain things you are not likely to think of, such as a house-fly, or a paper-knife, or a motor-boat.

There are certain definite laws which hold ideas together in the mind, just as gravitation, magnetism, cohesion and similar laws hold together material objects in the physical world.

For the purpose of this preliminary experiment I will give a list of the four main Roads of Thought. Notice, first, that among your thoughts about an elephant there will be images of things that resemble it very closely, that is, of other animals, such as a cow, a horse, or a camel. The first law of attraction between ideas is to be seen in this. Ideas of similar things cling closely together, and easily suggest one another. We will call this first principle the law of **Class**. It includes the relations between an object and the class to which it belongs, and also that between objects of the same class.

The second is the law of **Parts**. When you think of an elephant you will probably form special mental pictures of

its trunk, or ears, or feet, or when you think of its ears you may also think of other parts of it, such as the eyes.

The third law may be called **Quality**. It expresses the relation between an object and its quality, and also between objects having the same quality. Thus one may think of the cat as an artist, of the moon as spherical, etc., or if one thinks of the moon, one may also think of a large silver coin, because they have the quality of white, disc-like appearance in common.

The fourth law involves no such observation of the resemblances and differences of things, or an object and the class to which it belongs, or a whole and its parts, or an object and its prominent qualities. It is concerned with striking and familiar experiences of our own, and has more to do with imagination than logical observation.

If I have seen or thought of two things strongly or frequently together, the force of their joint impact on my consciousness will tend to give them permanent association in my mind. I therefore entitle the fourth principle the law of **Proximity**.

Thus, for example, if I think of a pen I shall probably think also of an inkpot, not of a tin of axle-grease. If I think of a bed I shall think of sleep, not of dancing. If I think of Brazil, I shall think of coffee and the marvellous river Amazon, not of rice and the Himalaya mountains.

Each one of us has an independent fund of experience made up of memories of such relationships seen, or heard of, or thought about, either vividly or repeatedly.

Within this law comes also familiar sequence, or contiguous succession, often popularly called cause and effect, as in exercise and health, over-eating and indigestion, war and poverty. It is proximity in time.

In connexion with Road I, I must mention a case which is often misunderstood—namely contrast. If two things contrast they must belong to the same class. You cannot

contrast a cow with blotting paper, or a walking stick with the square root of two. But you can contrast an elephant and a mouse, blotting paper and glazed paper, the sun and the moon, and other such pairs. So contrasts belong to Road I.

The four Roads of Thought mentioned above are given in a general way for our present purpose. For greater precision of statement the four laws must be subdivided; I will do this in a later chapter.

I wish the student particularly to notice that some ideas arise through the mind's capacity for **comparison**, that is through a logical faculty, while others arise simply in **imagination**, without any reason other than that they have been impressed upon it at some previous time. Comparison covers the first three laws, imagination the fourth only.

To convince the student that these mental bonds between ideas really exist, let me ask him to try another small preliminary experiment, this time not upon his own mind, but upon that of a friend. Repeat to your friend two or three times slowly the following list of sixteen words. Ask him to pay particular attention to them, in order—

Moon, dairy, head, paper, roof, milk, fame, eyes, white, reading, shed, glory, cat, top, sun, book.

You will find that he is not able to repeat them to you from memory.

Then take the following series and read them to him equally carefully.

Cat, milk, dairy, shed, roof, top, head, eyes, reading, book, paper, white, moon, sun, glory, fame.

Now ask your friend to repeat the list, and you will find that he has a most agreeable feeling of surprise at the ease with which he can perform this little feat.

Now the question is: why in the first place was he not able to recall the series of ideas, while in the second case he could easily remember them, the words being exactly the same in

both the sets? The reason is that in the second series the ideas are in rational order, that is, each idea is connected with that which preceded it by one of the four Roads of Thought which I have mentioned. In the first series they were not so connected.

I must remark that the deliberate use of these Roads of Thought involves nothing forced or unnatural. It is usual for our attention to go along them, as I have already indicated. For instance, I knew a lady in New York named Mrs. Welton. One day when I was thinking of her, I found myself humming the tune of "Annie Laurie." Somewhat surprised, I asked myself why, and brought to light the first line of the song, which goes: "Maxwellton's braes are bonny. . . ."

CHAPTER III

CONCENTRATION OF MIND

MANY years ago I invented another simple experiment to help some of my students to gain that control of mind which is called concentration. This has proved itself, I think, to be the very best means to that end. Let me ask the reader or student now to try this experiment for himself in the following form—

Select a quiet place, where you can be undisturbed for about fifteen minutes. Sit down quietly and turn your thought to some simple and agreeable subject, such as a coin, a cup of tea, or a flower. Try to keep this object before the mind's eye.

After a few minutes, if not sooner, you will, as it were, suddenly awake to the realization that you are thinking about something quite different. The reasons for this are two: the mind is restless, and it responds very readily to every slight disturbance from outside or in the body, so that it leaves the subject of concentration and gives its attention to something else.

Now, the way which is usually recommended for the gaining of greater concentration of mind, so that one can keep one's attention on one thing for a considerable time, is to sit down and repeatedly force the mind back to the original subject whenever it wanders away. That is not, however, the best way to attain concentration, but is, in fact, harmful rather than beneficial to the mind.

The proper way is to decide upon the thing on which your attention is to be fixed, and then *think about everything else you can without actually losing sight of it*. This will form a habit of recall in the mind itself, so that its tendency will be to return to the chosen object whenever it is for a moment diverted.

Still, it will be best of all if, in trying to think of other things while you keep the chosen object in the centre of your field of attention, you do so with the help of the four Roads of Thought, in the following manner—

Suppose you decide to concentrate upon a cow. You must think of everything else that you can without losing sight of the cow. That is, you must think of everything that you can that is connected with the idea of a cow by any of the four lines of thought which have been already explained.

So, close your eyes and imagine a cow, and say: "Law I—Class," and think: "A cow is an animal, a quadruped, a mammal"—there may be other classes as well—"and other members of its classes are sheep, horse, dog, cat—" and so on, until you have brought out *all* the thoughts you can from within your own mind in this connexion. Do not be satisfied until you have brought out every possible thought.

We know things by comparing them with others, by noting, however briefly, their resemblances and differences. When we define a thing we mention its class, and then the characters in which it differs from other members of the same class. Thus a chair is a table with a difference, and a table is a chair with a difference; both are articles of furniture; both are supports.

The more things we compare a given object with in this way the better we know it; so, when you have worked through this exercise with the first law and looked at all the other creatures for a moment each without losing sight of the cow, you have made brief comparisons which have improved your observation of the cow. You will then know what a cow is as you never did before.

Then go on to the second Road of Thought—that of Parts—and think distinctly of the parts of the cow—its eyes, nose, ears, knees, hoofs, and the rest, and its inner parts as well if you are at all acquainted with animal anatomy and physiology.

Thirdly comes the law of Quality. You think of the physical qualities of the cow—its size, weight, colour, form, motion, habits—and also of its mental and emotional qualities, as far as those can be discerned. And you think of other objects having the same prominent qualities.

Lastly comes the fourth division, that of Proximity, in which you will review "Cows I have known," experiences you have had with cows which may have impressed themselves particularly on your imagination. In this class also will come things commonly connected with cows, such as milk, butter, cheese, farms, meadows, and even knife handles made of horn and bone, and shoes made of leather.

Then you will have brought forth every thought of which you are capable which is directly connected in your own mind with the idea of a cow. And this should not have been done in any careless or desultory fashion; you should be able to feel at the end of the exercise that you have thoroughly searched for every possible idea on each line, while all the time the cow stood there and attention was not taken away from it.

A hundred times the mind will have been tempted to follow up some interesting thought with reference to the ideas which you have been bringing out, but every time it has been turned back to the central object, the cow.

If this practice is thoroughly carried out it produces a **habit of recall** which replaces the old habit of wandering, so that it becomes the inclination of the mind to return to the central thought, and you acquire the power to keep your attention upon one thing for a long time.

You will soon find that this practice has not only given you power of concentration, but has brought benefit to the mind in a variety of other ways as well. You will have trained it to some extent in correct and consecutive thinking, and in observation, and you will have organized some

of that accumulation of knowledge which perhaps you have for years been pitching pell-mell into the mind, as most people do. This exercise, practised for a little time every day for a few weeks, exactly according to instructions, will tidy or clean up the mind, and also lubricate it, so as to make it far brighter than it was before, and give it strength and quality evident not only at the time of exercise, but at all times, whatever may be the business of thought on which you are engaged during the day.

One of the most fruitful results will be found in the development of keen observation. Most people's ideas about anything are exceedingly imperfect. In their mental pictures of things some points are clear, others are vague, and others lacking altogether, to such an extent that sometimes a fragment of a thing stands in the mind as a kind of symbol for the whole.

A gentleman was once asked about a lady whom he had known very well for many years. The question was as to whether her hair was fair or dark, and he could not say. In thinking of her his mind had pictured certain parts only, or certain parts vaguely and others clearly. Perhaps he knew the shape of her nose, her general build and the carriage of her body; but his mental picture certainly had no colour in the hair.

The same truth may be brought out by the familiar question about the figures on the dial of your friend's watch, or about the shape and colour of its hands. One day I tested a friend with this question: "Can you tell me whether the numerals on your watch are the old-fashioned Roman ones which are so much used, or the common or Arabic numerals which have come into vogue more recently?"

"Why!" he replied, without hesitation. "They are the Roman numerals, of course."

Then he took out his watch, not to confirm his statement, but just in an automatic sort of way, as people do when

thinking of such a thing, and as he glanced at it a look of astonishment spread over his face.

"By Jove," he exclaimed, "they are the Arabic figures. And do you know, I have been using this watch for seven years, and I have never noticed that before!"

He thought he knew his watch, but he was thinking of part of it, and the part was standing in his mind for the whole.

Then I put another question to him: "I suppose you know how to walk, and how to run?"

"Yes," said he, "I certainly do."

"And you can imagine yourself doing those things?"

"Yes."

"Well, then," said I, "please tell me what is the difference between running and walking."

He puzzled over this question for a long time, for he saw that it was not merely a difference of speed. He walked up and down the room, and then ran round it, observing himself closely. At last he sat down, laughing, and said: "I have it. When you walk you always have at least one foot on the ground, but when you run both feet are in the air at the same time."

His answer was right, but he had never known it before.

Life is full of inaccuracies due to defective observation, like that of the schoolboy who, confronted with a question about the Vatican, wrote: "The Vatican is a place with no air in it, where the Pope lives."

CHAPTER IV

AIDS TO CONCENTRATION

LET me now give some hints which will make a great improvement in the practice of concentration.

Many people fail in concentration because they make the mistake of trying to *grasp* the mental image firmly. Do not do that. Place the chosen idea before your attention and look at it *calmly*, as you would look at your watch to see the time. Such gentle looking reveals the details of a thing quite as well as any intense effort could possibly do—perhaps even better.

Try it now, for five minutes, for when once you have realized how to look at a thing over and see it completely—in whole and in part, without staring, peering, frowning, holding the breath, clenching the fists, or any such action, you can apply your power to the mental practice of concentration.

Pick up any common object—a watch, a pen, a book, a leaf, a fruit, and look at it calmly for five minutes. Observe every detail that you can about it, as to the colour, weight, size, texture, form, composition, construction, ornamentation, and the rest, without any tension whatever. Attention without tension is what you want.

After you have felt how to do this, you will understand how concentration can be carried on in perfect quietude. If you wanted to hold out a small object at arm's length for as long a time as possible, you would hold it with a minimum of energy, letting it rest in the hand, not gripping it tightly.

Do not imagine that the idea that you have chosen for your concentration has some life and will of its own, and that it wants to jump about or to run away from you. It is not the object that is fickle, but the mind. Trust the object to remain where you have put it, before the mind's eye, and

keep your attention poised upon it. No grasping is necessary ; indeed, that tends to destroy the concentration.

People usually employ their mental energy only in the service of the body, and in thinking in connexion with it. They find that the mental flow is unobstructed and that thinking is easy when there is a physical object to hold the attention, as, for example, in reading a book. Argumentation is easy when each step is fixed in print or writing, or the thought is stimulated by conversation. Similarly, a game of chess is easy to play when we see the board ; but to play it blindfold is a more difficult matter.

The habit of thinking only in association with bodily activity and stimulus is generally so great that a special effort of thought is usually accompanied by wrinkling of the brows, tightening of the lips, and various muscular, nervous and functional disorders. The dyspepsia of scientific men and philosophers is almost proverbial. A child when learning anything displays the most astonishing contortions. When trying to write it often follows the movements of its hands with its tongue, grasps its pencil very tightly, twists its feet round the legs of its chair, and so makes itself tired in a very short time.

All such things must be stopped in the practice of concentration. A high degree of mental effort is positively injurious to the body unless this stoppage is at least partially accomplished. Muscular and nervous tension have nothing to do with concentration, and success in the exercise is not to be measured by any bodily sensation or feeling whatever. Some people think that they are concentrating when they feel a tightness between and behind the eyebrows ; but they are only producing headaches and other troubles for themselves by encouraging the feeling. It is almost a proverb in India that the sage or great thinker has a smooth brow. To screw the face out of shape, and cover the forehead with lines, is usually a sign that the man is

trying to think beyond his strength, or when he is not accustomed to it.

Attention without tension is what is required. Concentration must be practised always without the slightest strain. Control of mind is not brought about by fervid effort of any kind, any more than a handful of water can be held by a violent grasp, but it is brought about by constant, quiet, calm practice and avoidance of all agitation and excitement.

Constant, quiet, calm practice means regular periodical practice continued for sufficient time to be effective. The results of this practice are cumulative. Little appears at the beginning, but much later on. The time given at any one sitting need not be great, for the quality of the work is more important than the quantity. Little and frequently is better than much and rarely. The sittings may be once or twice a day, or even three times if they are short. Once, done well, will bring about rapid progress; three times, done indifferently, will not. Sometimes the people who have the most time to spare succeed the least, because they feel that they have plenty of time and therefore they are not compelled to do their very best immediately; but the man who has only a short time available for his practice feels the need of doing it to perfection.

The exercise should be done at least once every day, and always before relaxation and pleasure, not afterwards. It should be done as early in the day as is practicable, not postponed until easier and more pleasurable duties have been fulfilled. Some strictness of rule is necessary, and this is best imposed by ourselves upon ourselves.

Confidence in oneself is also a great help to success in concentration, especially when it is allied to some knowledge of the way in which thoughts work, and of the fact that they often exist even when they are out of sight. Just as the working of the hands and feet and eyes, and every other part of the physical body, depends upon inner organs of the body

upon whose functioning we may completely rely, so do all the activities of thought that are visible to our consciousness depend upon unseen mental workings which are utterly dependable.

Every part of the mind's activity is improved by confidence. A good memory, for example, rests almost entirely upon it ; the least uncertainty can shake it very much indeed.

I remember as a small boy having been sent by my mother, on some emergency occasion, to purchase some little thing from a small country grocery about half a mile away from our house. She gave me a coin and told me the name of the article which she wanted. I had no confidence in the tailor's art, and certainly would not trust that coin to my pocket. I could not believe, in such an important matter, that the object would still be in the pocket at the end of the journey, so I held the coin very tightly in my hand so as to feel it all the time. I also went along the road repeating the name of the article, feeling that if it slipped out of my consciousness for a moment it would be entirely lost. I had less confidence in the pockets of my mind than the little which I had in those made by my tailor. Yet despite my efforts, or more probably on account of them, on entering the little shop and seeing the big shopman looming up above me in a great mass, I did have a paralytic moment in which I could not remember what it was that I had to get.

This is not an uncommon thing, even among adults. I have known many students who seriously jeopardized their success in examinations by exactly the same sort of anxiety. But if one wants to remember it is best to make the fact or idea quite clear mentally, then look at it with calm concentration for a few seconds, and then let it sink out of sight into the depths of the mind, without fear of losing it. You may then be quite sure that you can recall it with perfect ease when you wish to do so.

This confidence, together with the method of calm looking,

will bring about a mood of concentration which can be likened to that which you gain when you learn to swim. It may be that one has entered the water many times, that one has grasped it fiercely with the hands and sometimes also with the mouth, only to sink again and again; but there comes an unexpected moment when you suddenly find yourself at home in the water. Thenceforward, whenever you are about to enter the water you almost unconsciously put on a kind of mood for swimming, and that acts upon the body so as to give it the right poise and whatever else may be required for swimming and floating. So in the matter of concentration a day will come, if it has not already done so, when you will find that you have acquired the mood of it, and after that you can dwell on a chosen object of thought for as long as you please.

SECTION II

IMAGINATION AND ITS USES

CHAPTER V

MENTAL IMAGES

IMAGINATION is that operation of the mind which makes mental images or pictures. Sometimes these are called also "thoughts," or again, "ideas." But thought is, properly understood, a process, that is, a movement of the mind. Thought is dynamic, but *a* thought or idea is static, like a picture.

In order that the process of thinking may take place, there must be thoughts or ideas or mental images for it to work with, and it is at its best when these are clear and strong. So we take up as the second part of our study the means by which our imagination may be improved. We are all apt to live in a colourless mental world, in which we allow words to replace ideas. This must be remedied if our minds are to work really well and give us a colourful existence.

But first let us examine our **thinking**. In it our attention moves on from one thought to another—or rather from one group of thoughts to another group of thoughts, since most of our images are complex. The dynamic **thinking** makes use of the static **thoughts**, just as in walking there are spots of firm ground on which the feet alternately come to rest. You cannot walk in mid-air. In both cases the dynamic needs the static. In walking you put a foot down and rest it on the ground. Then you swing your body along, with that foot as a point of application for the forces of the body against the earth. At the end of the movement you bring down the other foot to a new spot on the ground. In the next movement you relieve the first foot and poise the body on the other as a new pivot, and so on. Thus transition and poise alternate in walking, and they do the same in thought.

Suppose I think: "The cat chases the mouse, and the

mouse is fond of cheese, and cheese is obtained from the dairy, and the dairy stands among the trees." There is no connexion between the cat and the trees, but I have moved in thought from the cat to the trees by the stepping stones of mouse, cheese and dairy.

Now that we see clearly the distinction between **ideas** and **thinking**, let us turn, in this second part of our study, to the business of developing the power of imagination.

We shall begin our course by a series of exercises intended to train the mind to form, with ease and rapidity, full and vivid mental pictures, or **idea-images**.

When a concrete object is known, it is reproduced within the mind, which is the instrument of knowledge; and the more nearly the image approximates to the object, the truer is the knowledge that it presents. In practice, such an image is generally rather vague and often somewhat distorted.

For our purpose we will divide **idea-images** into four varieties; simple concrete, complex concrete, simple abstract, and complex abstract.

Simple concrete ideas are mental reproductions of the ordinary small objects of life, such as an orange, a pen, a cow, a book, a hat, a chair, and all the simple sensations of sound, form, colour, weight, temperature, taste, smell, and feeling.

Complex concrete ideas are largely multiples of simple ones, or associations of a variety of them such as a town, a family, a garden, ants, sand, provisions, furniture, clothing, Australasia.

Simple abstract ideas are those which belong to a variety of concrete ideas, but do not denote any one of them in particular, such as colour, weight, mass, temperature, health, position, magnitude, number.

Complex abstract ideas are combinations of simple ones, such as majesty, splendour, benevolence, fate.

The difference between simple and complex ideas is one of degree, not of kind. What is simple to one person may

appear complex to another. A man with a strong imagination is able to grip a complex idea as easily as another may hold a simpler one.

A good exercise in this connexion is to practise reproducing simple concrete objects in the mind. This should be done with each sense in turn. If a student has been observing flowers, for example, he should practise until he can, in imagination, seem to see and smell a flower with his eyes closed and the object absent, or at least until he has an idea of the flower sufficiently real and complete to carry with it the consciousness of its odour as well as its colour and form. He may close his eyes, fix his attention on the olfactory organ, and reproduce the odour of the flower by an effort of will. Simply to name an object and remember it by its name does not develop the faculty of imagination.

I will now give a few specific exercises along these lines—

EXERCISE 1. Obtain a number of prints or drawings of simple geometrical figures. Take one of these—say a five-pointed star—look at it carefully, close the eyes, and imagine its form and size. When the image is clear, proportionate and steady in the imagination, look at the drawing again and note any differences between it and the original. Once more close the eyes and make the image, and repeat the process until you are satisfied that you can imagine the form accurately and strongly. Repeat the practice with other forms, gradually increasing in complexity.

EXERCISE 2. Repeat the foregoing practice, but use simple objects, such as a coin, a key, or a pen. Try to imagine them also from both sides at once.

EXERCISE 3. Obtain a number of coloured surfaces; the covers of books will do. Observe a colour attentively; then try to imagine it. Repeat the process with different colours and shades.

EXERCISE 4. Listen intently to a particular sound. Reproduce it within the mind. Repeat the experiment with

different sounds and notes, until you can call them up faithfully in imagination. Try to hear them in your ears.

EXERCISE 5. Touch various objects, rough, smooth, metallic, etc., with the hands, forehead, cheek and other parts of the body. Observe the sensations carefully and reproduce them exactly. Repeat this with hot and cold things, and also with the sensations of weight derived from objects held in the hands.

EXERCISE 6. Close your eyes and imagine yourself to be in a small theatre, sitting in the auditorium and facing the proscenium, which should be like a room, barely furnished with perhaps a clock and a picture on the wall, and a table in the centre. Now select some simple and familiar object, such as a vase of flowers. Picture it in imagination as standing on the table. Note particularly its size, shape, and colour. Then imagine that you are moving forward, walking to the proscenium, mounting the steps, approaching the table, feeling the surface of the vase, lifting it, smelling the flowers, listening to the ticking of the clock, etc.

Get every possible sensation out of the process, and try *not* to think in words, nor to name the things or the sensations. Each thing is a bundle of sensations, and imagination will enable the mind to realize it as such.

It may be necessary for some students at first to prompt their thought by words. In this case, questions about the objects may be asked, in words, but should be answered in **images**. Each point should be dealt with deliberately, without hurry, but not lazily, and quite decisively. The thought should not be lumpy ore but pure metal, clean-cut to shape. A table of questions may be drawn up by the experimenter somewhat on the following plan: As regards sight, what is the outline, form, shape, colour, size, quantity, position, and motion of the object? As regards sound, is it soft or loud, high or low in pitch, and what is its timbre? As regards feeling, is it rough, smooth, hard, soft, hot, cold, heavy,

light? As regards taste and smell, is it salty, sweet, sour pungent, acid? And finally, among these qualities of the object, which are the most prominent?

The value of the proscenium is that it enables you to get the object by itself, isolated from many other things, and the simple pretext of stepping into the proscenium is a wonderful aid to the concentration necessary for successful imagination.

After this practice has been followed it will be found to be an easy matter, when reading or thinking about things, or learning them, to tick them off mentally by definite images, or, in other words, to arrest the attention upon each thing in turn and only one at a time. If you are reading a story, you should seem to see the lady or gentleman emerge from the door, walk down the steps, cross the pavement, enter the motor car, etc., as in a moving picture. The process may seem to be a slow one when a description of it is read, but it becomes quite rapid after a little practice.

It will always help in the practice of concentration or imagination if you take care to make your mental images natural and to put them in natural situations.

Do not take an object such as a statuette and imagine it as poised in the air before you. In that position there will be a subconscious tendency for you to feel the necessity of holding it in place. Rather imagine that it is standing on a table in front of you, and that the table is in its natural position in the room (as in the experiment with flowers in a vase on the table in the proscenium already mentioned).

Launch yourself gently into your concentration by first imagining all the portion of the room which would be normally within range of your vision in front of you; then pay less attention to the outermost things and close in upon the table bearing the statuette. Finally close in still more until only the little image on the table is left and you have forgotten the rest of the room.

Even then, if the other things should come back into your

thought do not be troubled about them. You cannot cut off an image in your imagination as with a knife. There will always be a fringe of other things around it, but they will be faint and out of focus.

Just as when you focus your eye on a physical object the other things in the room are visible in a vague way, so when you focus your mental eye upon the statuette other pictures may arise in its vicinity. But as long as the statuette occupies the centre of your attention and enjoys the full focus of your mental vision, you need not trouble about the other thoughts that come in. With regard to them you will do best to employ the simple formula: "I don't care."

If you permit yourself to be troubled by them, they will displace the statuette in the centre of the stage, because you will give attention to them; but if you see them casually, and without moving your eyes from the statuette say: "Oh, are *you* there? All right, stay there if you like, go if you like; I don't care," they will quietly disappear when you are not looking. Do not try to watch their departure. You cannot have the satisfaction of seeing them go, any more than you can have the pleasure of watching yourself go to sleep. But why should you want it?

Make your object of imagination fully natural by investing it with *all* its usual qualities. If it is a solid thing, make it solid in your imagination, not flat like a picture. If it is coloured, let the colour shine. Be sensible of its weight as you would if you were actually looking at a physical object. Things that are naturally still should appear positively still in your image, and moving things definitely moving—such as trees, whose leaves and branches may be shaking and rustling in the wind, or as fishes swimming, or birds flying, or persons walking and talking, or a river running along with pleasant tinkling sounds and glancing lights.

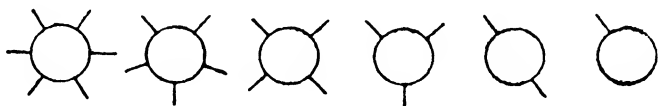
CHAPTER VI

FAMILIARIZATION

So far we have contented ourselves with simple exercises of the imagination. Let us now see what part imagination plays and can play in the grasping and remembering of ideas which are new to us.

Suppose that we have to learn the letters of a foreign alphabet, the appearances and names of plants, minerals or persons, the outlines or forms of countries, or other such things, which are new to us. It is exceedingly difficult to remember these unfamiliar things, unless we first make them familiar with the aid of imagination.

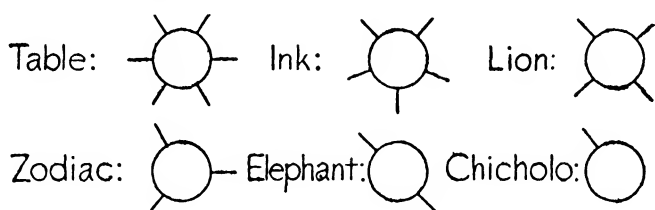
In this part of my subject I will follow the excellent teaching of a certain Major Beniowski, who expounded the art of familiarization a century ago. He pointed out that to himself the notion "table" was very familiar, meaning that it had been well or frequently impressed upon his mind and he knew a great many properties and circumstances relating to a table. The notion "elephant," he said, was less familiar. He indicated the familiarity of different things in six degrees, according to the following symbols—





The idea or mental image is represented by the circle, and its degree of familiarity, which will, of course, vary with different persons, according to their various experience, is indicated by the number of radiating lines.

Major Beniowski proceeded to give examples from his own mind, conveying the idea of the comparative degree of

his familiarity with table, ink, lion, zodiac, elephant, and chicholo as follows—



The diagram indicated that a table was to him an object of the highest familiarity, ink an object of less familiarity, and so on through the examples of a lion, the zodiac and an elephant, to a chicholo, which was an object of the greatest unfamiliarity.

Though we may note these degrees of familiarity, for practical purposes of learning and remembering it will be sufficient to employ two. Our aim in learning something—and our first step in remembering it—will be to convert a  into a . In practice we generally find that *two* things have to be remembered together. There is no adding of something to nothing in the mind; the newly acquired notion has to be put beside or added to something already known.

The learning of foreign alphabets or the names of plants, or other such things, involves the association of two things in the mind so that they will recur together in memory. Thus, if I am learning the Greek alphabet and I come across the sign π and am told that it represents the sound “pi,” my learning of this fact consists in my remembering together the *unfamiliar* form π and the *familiar* sound “pi.” I have to associate an unfamiliar with a familiar. Really all learning consists in associating something previously unknown with something previously known.

From these considerations Major Beniowski formulated what he called the three phrenotypic problems, namely—

(1) To associate a familiar with a familiar, as, for example, lamp with dog, or man with river.

(2) To associate a familiar with an unfamiliar, as, cow with obelus, or green leaf with chlorophyll.

(3) To associate an unfamiliar with an unfamiliar, as, pomelo with amra, or scutage with perianth.

Let me here quote Major Beniowski's excellent illustration—

"Suppose a London publisher, who being for many years a constant reader of the newspapers, cannot fail of becoming familiar with the *names* of the leading members of the House of Commons. He knows about the biography, literary productions, and political principles of Dr. Bowring, Sir Robert Peel, Lord Melbourne, etc., as much as any man living.

"Suppose also, that having on many occasions seen these personages themselves, as at chapel, the opera, museum, etc., he has their physiognomies, their gait, etc., perfectly impressed upon his brain.

"Suppose moreover that they are his occasional customers, although he never knew *who* these customers were; he never in the least suspected that these customers are the very individuals whose speeches he was just anatomizing, and whose political conduct he was just praising or deprecating.

"He knows well their *names*; he knows a host of circumstances connected with these names; he knows well the personages themselves; he saw them, he conversed with them, he dealt with them; still he had never an opportunity of learning that such names had anything to do with such personages.

"A visit to the gallery of the House of Commons during the debate on the (say) libel question, is the occasion on which those names and their owners are for the first time to come into contact with each other in his brain. The Speaker, one of his customers, takes the chair, and immediately our publisher bursts into an 'Is it possible!'

"He can scarcely believe it, that the gentleman whom he had seen so often before was the very Speaker of the House of Commons, whose name and person he knew separately for so many years.

"His surprise increases by seeing Dr. Bowring, Sir Robert Peel, Lord Melbourne, etc., addressing the House.



"He knew them all—he had seen all three in his own shop—he had conversed with them—nay, had made serious allusions to their names when present.



"He is now determined to commit to memory the names of all those personages; in other words, he is determined to stick together the *names* with their respective *personages*.

"Next to him sat a Colonial publisher just arrived say, from Quebec. This colonial gentleman is perfectly familiar with the names of the above M.P.'s; but he indeed never saw any of them.



"He also attempts to commit to memory the names of various speakers on the occasion.

"In another corner of the same House sat a Chinese, just arrived in London, who also wishes to commit to memory the names, shapes, gait, dresses, etc., of the Barbarians that spoke and legislated in his presence.





"The Londoner, the colonial gentleman, and the Chinese have evidently the same piece of knowledge to heave into their brain; but for the Londoner it is the first phrenotypic problem; he has to stick together a name which is to him a *familiar* notion with a personage which is for him a *familiar* notion also—thus, a  with a .

"For the colonial gentleman it is the second phrenotypic problem; he has to stick together a name which is for him a *familiar* notion, with a personage which is for him a *not-familiar* notion—thus, a  with a .

"For the Chinese it is the third phrenotypic problem; he has to stick together a name which is for him a *not-familiar*

notion, with a personage which is for him a *not-familiar* notion—thus, a  with a .

¹

The task for the Chinese is an exceedingly difficult one, yet students have often to face it. Imagine the distress of a student of botany who has hundreds of times to link a  with a , the appearance of an unfamiliar plant with an unfamiliar name. There is only one way of getting out of the difficulty, and that is in every case to make the unfamiliar thing familiar, to make the  into a , either by thinking about it, and studying it, or by seeing in it a resemblance to something already familiar.

In no case is it desirable to try to remember things which are not familiar. So, first recognize whether your problem is of the first, second or third order, and if it is of the second or third, convert the unfamiliar into a familiar.

The diagrams on page 34 show the process.

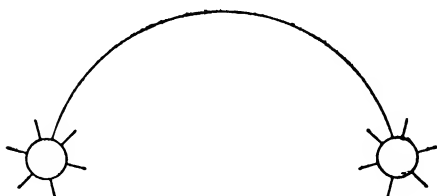
Let me now give an example, from the Major, of the process of making the unfamiliar familiar—

“In my early infancy, my father, a physician and an extraordinary linguist, initiated me in the mysteries of several mnemonic contrivances. In the study of languages I invariably employed the association of ideas. I succeeded so far that, when at the age of not full thirteen, my father sent me to study medicine at the University of Vilna, in Poland, relying upon my extraordinary memory, as it was called, I attended several courses of lectures, besides those usually prescribed for students in medicine.

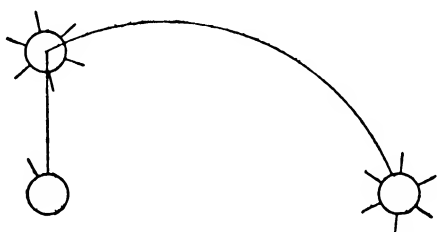
“I succeeded perfectly everywhere during several months, until spring came, and with it the study of botany. Here, far from outstripping my fellow-students, I actually remained behind even those whom I was accustomed to look upon as poor, flat mediocrities.

¹ *Handbook of Phrenotypics*, by Major Beniowski, 1845.

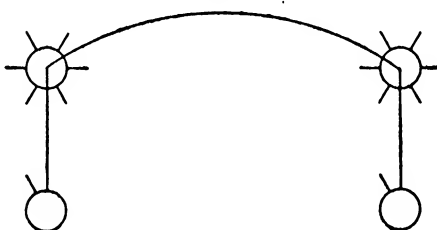
First Problem : familiar with familiar :



Second Problem: Unfamiliar with familiar:



Third Problem: Unfamiliar with Unfamiliar:



“The matter stood thus: Besides attending the lectures on botany, the students are admitted twice a week to the botanic garden; there they find a metallic label with a number upon it; that number refers them to a catalogue where they find the respective names; these names they write out into a copy-book thus—

No. 1778	.	.	<i>Valeriana officinalis,</i>
No. 9789	.	.	<i>Nepeta Cataria, etc.</i>

“And having thus found out the names of a dozen of plants they endeavour to commit them to memory in the best manner they can. Anyone finds it tiresome, awkward, and annoying to look to the huge numbers upon the label, then to the catalogue, then to the spelling of the names, then

to the copy-book, and after all to be allowed to remain there only about an hour twice a week, when the taking away with you a single leaf may exclude you for ever from entering the garden at all.

“But I was peculiarly vexed and broken-hearted. I came to the garden tired out by other studies; I had a full dozen of copy-books under my arm, a very old catalogue with many loose leaves; to which if you add an umbrella in my left, a pen in my right, an ink-bottle dangling from my waistcoat-button, and, above all, the heart of a spoiled child in my breast, you will have a tolerable idea of my embarrassment.

“Week after week elapsed before I mastered a few plants. When I looked at home into my copy-book, the scribbled names did *not* make rise the respective plants before my imagination; when I came to the garden, the plants did not make rise their respective names.

“My fellow-students made, in the meantime, great progress in this, for me, so unmanageable study;—for a good reason—they went every morning at five into the fields, gathered plants, determined their names, put them between blotting-paper, etc.—in a word, they gave to botany about six hours per day. I could not possibly afford such an expenditure of time; and besides, I could not bear the idea of studying simply as others did.

“The advantages I derived from mnemonic contrivances in other departments, induced me to hunt after some scheme in botany also.

“My landlady and her two daughters happened to be very inquisitive about the students passing by their parlour window, which was close to the gates of the university; they scarcely ever allowed me to sit down before I satisfied their inquiries respecting the names, respectability, pursuits, etc., of at least half a dozen pupils.

“I was never very affable, but on the days of my mischievous botanic garden they could hardly get from me a

single syllable; I could not, however, refuse, when they once urged their earnest request thus—‘Do tell us, pray, the name of that fish, do!’ pointing most pathetically to a pupil just hurrying by close to the window.

“When I answered, ‘His name is Fisher’ (I translate from the Polish, *Ryba Rybski*), they broke into an almost spasmodic chatter. ‘We guessed his name! Oh, he could not have another name. Look only,’ continued they, ‘how his cocked hat sits upon his head, pointing from behind forward, exactly in the same direction with his nose! Look to the number of papers and copy-books fluttering about on each side between his ribs and elbows! Look how he walks—he is actually swimming! Oh, the name Fisher becomes him exceedingly well.’

“I could not but agree with the justness of their remarks. I complimented them. I became more attentive to their conversation when at table, which happened to run thus—‘Mother, what has become of the Long Cloak? I saw him yesterday with the Old Boot. Do they reside together?’ ‘Oh, no; the Long Cloak looks often through yon garret window, where the Big Nose lived some time ago, etc., etc.’ They perfectly understood one another by these nicknames—Long Cloak, Old Boot, Big Nose, etc.

“This conversation suggested to me at once the means of dispensing with my old anarchical catalogue when in the garden—and in fact the whole plan of proceeding in the study of botany stood before my view. I felt confident I should soon leave all the young, jealous, triumphant, and sneering botanic geniuses at a respectable distance behind.

“It happened to be the time of admission; I proceeded immediately to that corner of the garden where the medical plants were, leaving the catalogue at home. I began christening these plants just in the same manner as my landlady and her ingenious daughters christened the students of the

university, viz. I gave them those names which spontaneously were suggested to me by the sight, touch, etc., of them.

"The first plant suggested imperatively the name of *Roof covered with snow*, from the smallness, whiteness and peculiar disposition of its flowers, and so I wrote down in my copy-book 'No. 978, *Roof covered with snow*.'

"Next I found No. 735, *Red, big-headed, cock-nosed plant*; and so on to about twenty plants in a few minutes.

"Then I tried whether I had committed to memory these plants—YES. In looking to the plants, their nicknames immediately jumped up before my imagination; in looking to these nicknames in my copy-book the plants themselves jumped up.

"My joy was extreme. In a quarter of an hour I left the garden, convinced that I had carried away twenty plants which I could cherish, repeat, meditate upon at my own leisure.

"The only thing that remained to be done was to know how people, how learned people, call them. This business I settled in a few minutes, thus: I put comfortably my catalogue upon the table, looked for No. 978, and found *Achilæa Millefolium*; this made rise before my imagination *an eagle with a thousand feathers* (on account of *aquila* in Latin, eagle; *mille*, thousand; and *folium*, leaf).

"I put simultaneously before my mind, *Roof covered with snow*, and *eagle*; and *high mountain rose* immediately before my imagination, thus—*ROOFS covered with snow are to be found in high mountains, and so are EAGLES.*"

I have quoted the Major's experience fully, as it indicates so well the average student's feelings, and so graphically explains the manner of relieving them.

It must be noted that when Major Beniowski had familiarized a plant in the garden, and afterwards the name of the plant at home, by likening them to something that he knew well, and had come to the business of joining the two

permanently in his mind, he used his imagination in a *natural* way. He did not *invent* a story to connect them ; he simply put the two things simultaneously before his mind's eye, and waited, and the connexion came of itself.

The probability of such a common idea springing up quickly is dependent upon the degree of familiarity of *both* the ideas which are to be connected. Hence the importance of familiarization *first*.

By this means the Major found that he could at once carry away from the garden a clear memory of at least twenty plants within the hour, and as his faculty grew by exercise he memorized some hundreds of medical plants in a few visits to the garden.

Every student who uses this method to learn names of objects, or the meaning of words of a foreign language, or in fact anything of the kind, will find that his faculty rapidly grows. But let him be warned, for the benefit of his memory and mind, to use the imagination only *naturally* in finding the common or connecting idea. Do not create a fanciful picture, for if you do you will have made something *extra*, and what is more, unnatural, which will be a burden to the mind.

Let me summarize this process of learning and remembering by imagination :

First, it must be settled which two notions you want to connect.

Secondly, the notions must be familiarized, if necessary.

Thirdly, the notions must be stuck together by simultaneous contemplation, resulting in natural imagination, and

Then, when one of the notions is given the other will rise before the mind's eye.

CHAPTER VII

FAMILIARIZATION OF FORMS

LET me now apply the method of familiarization to learning and remembering forms.

We will consider first the forms of foreign alphabets. When learning these, do not try to remember them by simply staring at them. Look quietly at each form until you find in it a resemblance to some other form which is already familiar to you.

Sometimes you will say to yourself that the form has no comparison with anything that you know. But that is never the case, as the following conversation between Major Beniowski and one of his pupils will show. The pupil was about to commit to memory the Hebrew alphabet—

א	.	.	.	.	alef
ב	.	.	.	.	baiss
ג	.	.	.	.	guimmel
ד	.	.	.	.	dalet
ה	.	.	.	.	hay, etc., etc.

"*Beniowski*. What name would *you* give to the first Hebrew letter? or rather, What is the phantom that rises before your imagination, in consequence of your contemplating the first Hebrew letter?

"*Pupil*. I think it is like an invalid's *chair*.

"*B*. Therefore call it an invalid's chair. What name would you give to the second letter?

"*P*. It is exactly like the iron handle of a box.

"*B*. Call it so. What of the third?

"*P*. Nothing—it is like nothing—I can think of nothing.

"*B*. I cannot easily believe you—try. I infer from your looks that you think it would be useless to express your strange imaginings—they would laugh at you.

“*P.* All that this third letter reminds me of is a poor Spanish-legion man, whom I saw sitting on the pavement with swollen legs and no arms.

“*B.* And this you call nothing! this is valuable property of your own; you did not acquire it without a certain expenditure of life; you can turn it to good account; call this letter *the Spanish-legion man*. What of the fourth?

“*P.* I understand you now—this fourth letter is evidently like the *weathercock* upon yon chimney opposite your window; the *fifth* is like a *stable* with a small window near the roof, etc., etc.”

As a second example (merely for illustration, as I do not expect the reader of this book to learn Sanskrit) I will take up some of the unaspirated consonants of the Devanagari alphabet, which is used in Sanskrit and some of its derivative languages. We may as well make use of the principle of sense-proximity, as well as that of association or mind-proximity. Therefore I first give a Devanagari letter, and then the Roman letter (which, I assume, will be familiar to the reader) close beside it.

The gutturals are—

क ka ग ga ङ nga

We have now to find familiar forms to name the forms which are strange to us. K looks to me rather like a knot, g like a gallows, and ng like a rearing snake. I find no great difficulty in associating these with ka, ga, and nga, respectively, for k and g are the first letters of the words knot and gallows, and a rearing cobra is a very picture of *anger*.

The palatals are—

च cha ज ja ञ na

Here ch looks like a pointing finger—*chiding*. J resembles a footballer kicking—*scrimmage*. N reminds me of a lobster’s nipper.

The dentals are—

त ta द da न na

In this case t appears to me like a *tail*, d like a hunchback sitting down—*dwarf*, and n like a *nose*.

The labials are—

प pa ब ba म ma

P is like a P turned round; b like a *button*; m is quite square—*mathematical*.

I will conclude with the semi-vowels—

य ya र ra ल la व va

These will serve to illustrate the principle of comparison with the forms already learned, since y resembles p and v is much like b. R reminds me of an old-style *razor*, partially opened in use, and l seems like a pair of crab's *legs*. I have said enough to enable the student of Sanskrit or Hindi or Mahratti to learn the rest of the alphabet by himself within an hour or two—a process which usually takes days.

Next, as further illustration, let me give some items from the Russian alphabet—

г g, very much like a little r—*rag*.

Δ d, like a *delta*.

Ж zh, rather like a jumping jack with a string through the middle which when pulled causes the arms and legs to fly outwards—*plaything—jeunesse*.

Л l, something like a *step-ladder*.

Н n, like H—*hen*.

Ф f, an arrow going through a target—*flight or fight*.

We can do the same with any other alphabet. The following are some suggestions for learning Pitman's shorthand outlines: | t is like a T without a *top*; - k is like a *coward*, lying down; ∪ m is like a little *mound*. Among the Greek letters

gamma is like a catapult—game; *pi* is like an archway—pylon; *lambda* is leaning; *phi* is like an arrow piercing a target—battle—fight. The Persian characters require a little more imagination than most of our alphabets do, yet when I look at them I find boats, waves, commas, eyes, wings, snakes, and funny little men, standing, crouching, and running.

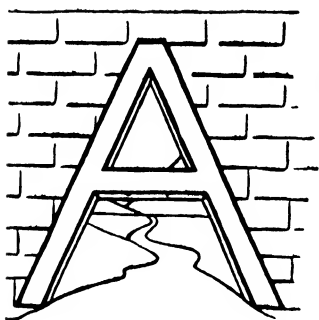
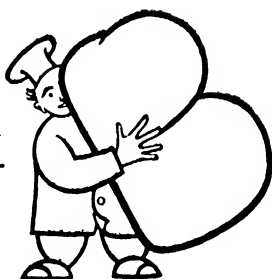
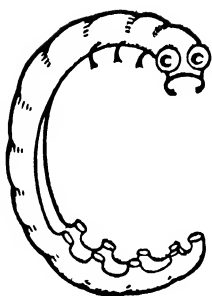
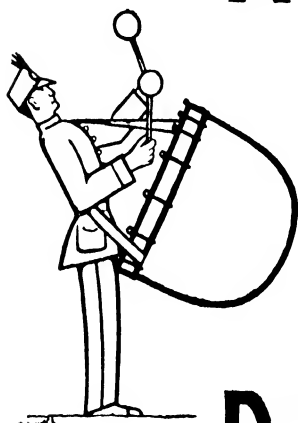
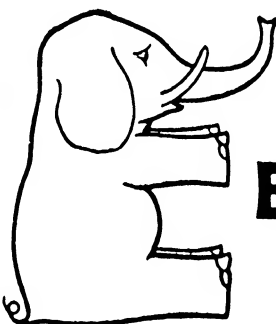
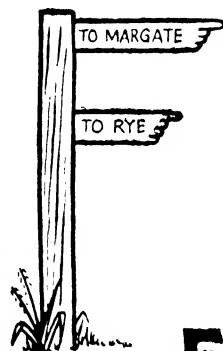
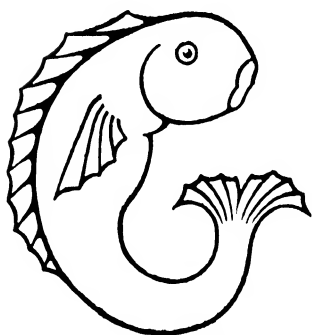
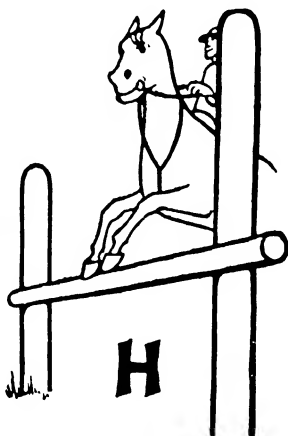
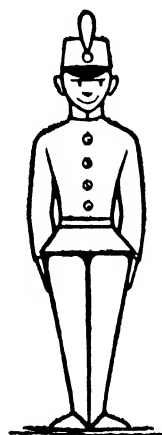
I will now give the Roman alphabet in a form in which it can be taught in English to young children in a very short time :

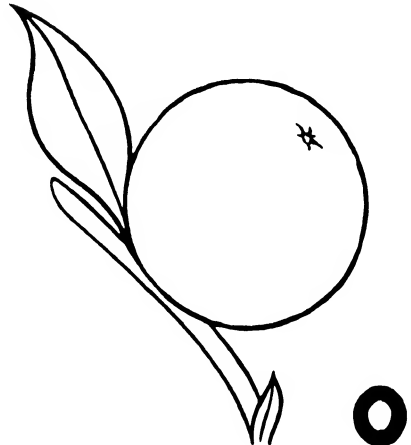
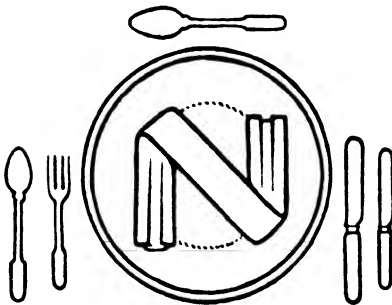
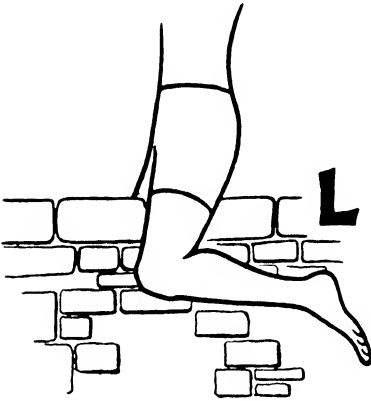
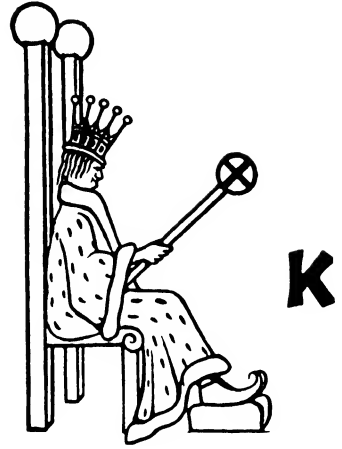
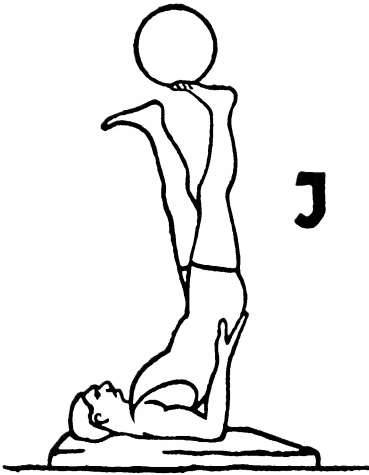
A stands for an arch ; B for a bundle ; C for a coiled caterpillar ; D for a drum ; E for an elephant sitting up in a circus ; F for a finger-post ; G for a goldfish curled round in the Japanese style ; H for a hurdle ; I for an icicle or a little imp standing stock-still ; J for a juggler lying on his back, balancing a ball on his feet ; K for a king, sitting on a throne and holding out his sceptre in a sloping direction ; L for a leg ; M for mountains ; N for a napkin on the table ; O for an orange ; P for a parrot with a large head ; Q for a queen, very fat and round, with a little tail of her gown sticking out near her feet ; R for a rat climbing a wall, with its tail touching the floor ; S for a snake ; T for a small table, with one central leg ; U for an urn ; V for a valley ; W for waves ; X for Mr. X—a monkey stretching out its arms and legs to hold the branches of a tree ; Y for yarn, frayed at the end, or a yak's head, with large horns ; Z for a zigzag—a flash of lightning.

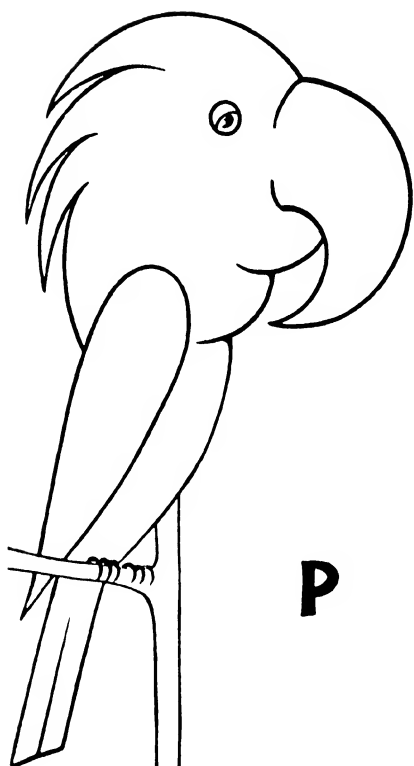
For each of the objects the teacher should draw a picture bearing a strong resemblance to the letter that is to be taught (somewhat as in our illustrations) and the letters should at first be represented by the full words, arch, bundle, caterpillar, drum, etc.¹

Turning now to geographical outlines, the best-known example of comparison is the outline of Italy, which every schoolboy remembers much better than he does that of any other country, for the simple reason that he has noticed that

¹ This method of representing the alphabet is copyright.

**A****B****C****D****E****F****G****H****I**

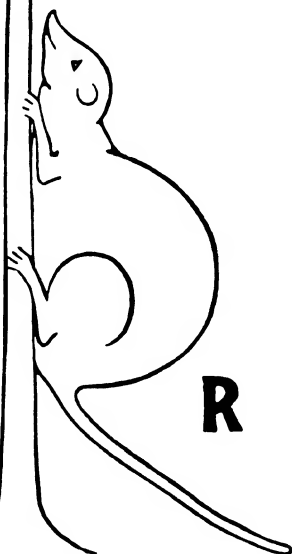




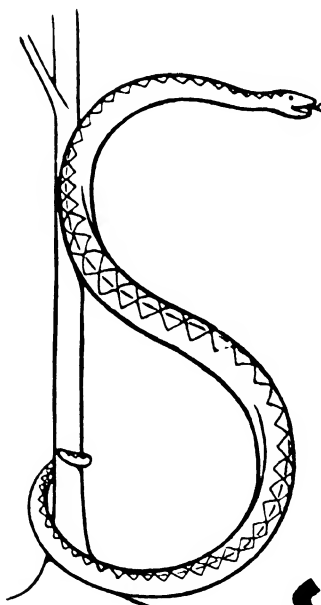
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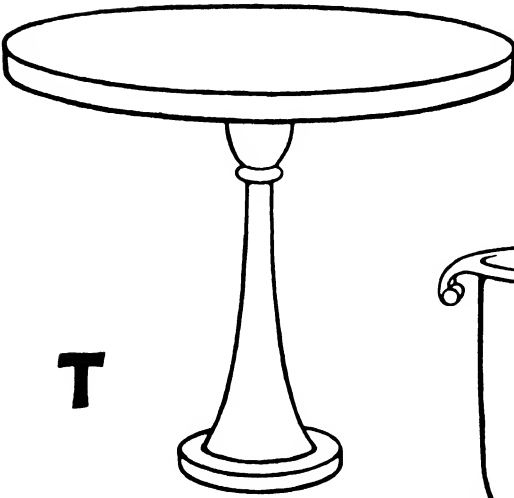
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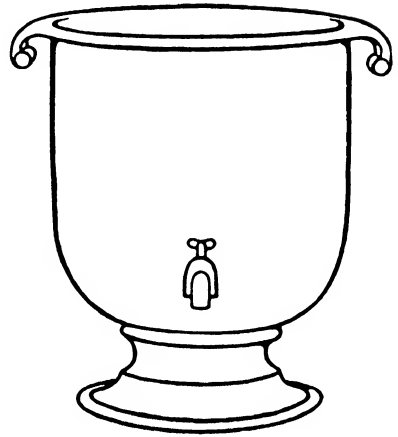
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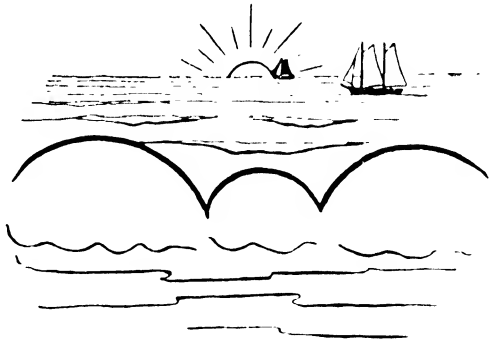
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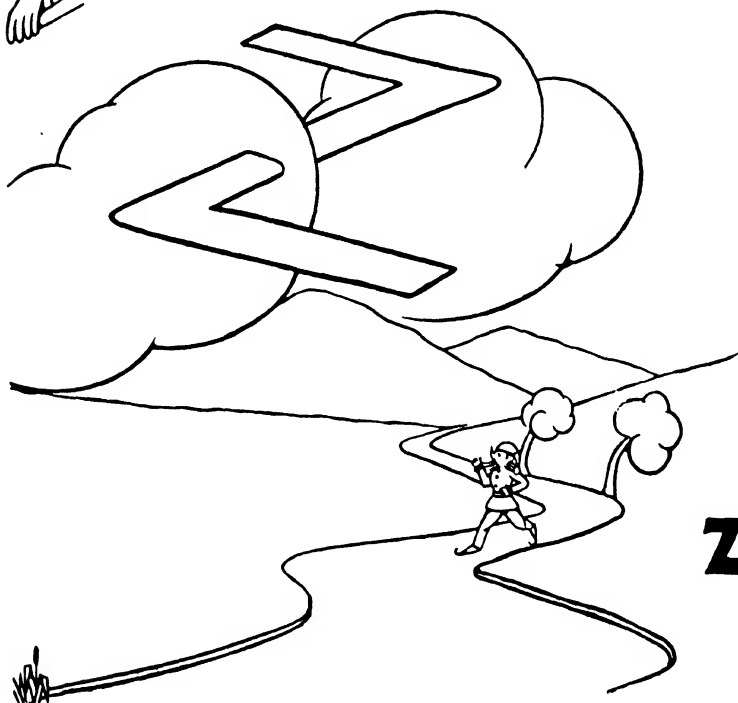
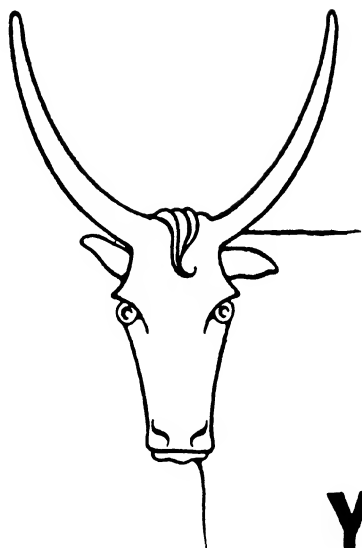
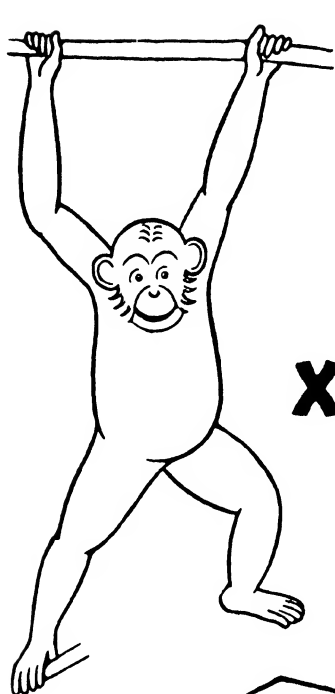
U



V



W



it resembles a big boot kicking at an irregular ball, which we call the island of Sicily. Africa is like a ham ; South America resembles a peg-top ; Mexico is like a sleeve ; Newfoundland resembles a distorted lobster ; France appears like a shirt without sleeves ; Norway and Sweden are like an elephant's trunk ; India is like Shri Krishna dancing and playing his flute ; the river Severn is like a smiling mouth.

The student of botany has to remember the general appearance of a large number of plants and flowers. We have already seen that the best plan to follow in remembering these is not to go into the garden or the field with textbook in hand, but to go among the flowers and plants and give them names of your own invention. When the forms are thus made familiar to the mind they can easily be recalled by remembering the new names, and afterwards the orthodox names can be learned, just as we should learn a number of foreign words.

The popular names of many plants are already based on simple comparisons. Among these one thinks at once of the sunflower, the buttercup and the bluebell, and the campanula is obviously a cluster of most exquisite bells. But when the student comes to narcissus, calceolaria, chrysanthemum and eschscholtzia and many other scientific names he must have recourse to his own familiarization for remembering their forms in the beginning.

In private life, living in the country, we often see and wish to remember flowers, without ever hearing what people have named them. Then it is well to give them our own names for the time being.

Near one of my dwellings there was a hedge full of jolly little old men with occasional purple-grey hair, and they seemed to bob their funny round heads in the breeze in response to my nod. I did not in the least know their names, but we were not worse friends on that account. The allegory of Narcissus is reflected in the flower of that name ; the way

in which the gentle flower bends its lovely head is remindful of the fall of the spirit enamoured of its image reflected in the waters of existence; yet for most of us it remains a beautiful star. The crinkled white champaka reminds me always of a swastika; and the clover, so like a fluffy ball, is in India often called the rudraksha flower, because it is thought to resemble the crinkled berry beads which yogis wear, these in turn being held sacred because their markings are thought to be strange letters (*aksha*) written by the God Rudra or Shiva. We may think of the drooping bag-like lip of the calceolaria, of the large velvet face of the pansy, of the curious lips and curly strings of the sweet pea, and of the exfoliated heart of the rose, and we may know these little ones much better by these happy names than if our brains are fagged beforehand by the crabbed terminology of the books.

Major Beniowski's experience has already suggested to us the way to remember persons—a method which, in fact, led him to his system of familiarization of the forms of plants. I may relate in this connexion one experience of my own. Once, when I was travelling on a boat, I made the acquaintance of a studious and learned university professor who won my esteem. His name was Dittmer. Now, I was very familiar in India with the various kinds of oil lamps which were imported in large quantity from a manufacturing firm named Dittmar. I had seen the name on lamps in many places, so the connexion of Dittmar and lamps was strong in my mind. Well, when I first met Prof. Dittmer he was wearing a huge pair of round tortoise-shell reading glasses. They reminded me irresistibly of a pair of motor-car lamps. Hence I had no difficulty in remembering his name. Another reminder also occurred to me. He looked somewhat like the immortal Mr. Pickwick—wick—lamp—Dittmer. I am sure that, if this happens to catch the eye of the professor, he will not be offended at the liberty with his person which I have taken, for it is in the interests of science.

CHAPTER VIII

FAMILIARIZATION OF WORDS

THE principle of familiarization is especially useful in learning the words of a foreign language. In this connexion let me enunciate again two important points. Do not try to put an unfamiliar thing into the mind, and do not try to do two things at once, namely, to remember an unfamiliar word and also its meaning. To learn foreign words always reduce them to familiar sounds; then associate them with their meanings.

First take the foreign word which you have to learn, and repeat it to yourself without thinking of any meaning until you are able to find its resemblance to some other word that is quite familiar to you.

Suppose I have to learn the French word "maison." As I turn it over in my mind there comes up the similar English word "mason." I am told that the word "maison" means house. Well, a mason builds a house. I have just asked my wife to give me another French word at random. Her reply is "livre," which means a book. Pondering for a moment on the sound "livre" I find that the English word "leaf" comes up in my mind, and I think, "A book is composed of leaves."

Very often when we are learning a foreign language there are many words which are similar to words having the same meaning in our own language. So, first of all, if you are free to choose your words, look over your vocabulary, and learn all the words that clearly resemble English words, such as, for example, in German—

Wunder (wonder), Vater (father), Nord (north), Sohn (son), Schuh (shoe), Ebbe (ebb), Ende (end), Ochs (ox), Dank (thank), Eis (ice), Wasser (water), Donner (thunder),

Ohr (ear), Krone (crown), Dorn (thorn), Schulter (shoulder), Seele (soul), Kuh (cow), Strom (stream), Garten (garden), and hundreds of others.

If, however, the student is compelled to follow a course of study in the order of a prescribed textbook, he will have to take the words as they come, and will at once find many which do not appear to resemble English words. He takes the first word, Saal, room, and repeats: "Saal, room, Saal, room . . ." until his head buzzes; then he goes on to "Schutz, protection, Schutz, protection, Schutz, protection . . ." until his brain throbs; and then "Schön, beautiful, Schön, beautiful, Schön, beautiful . . ." until his mind whirls; and then "Trennung, separation, Trennung, separation, Trennung, separation . . ." until he nearly drops from his seat, and yawns and rubs his eyes and wishes—oh, how longingly—that it was time to go out and play cricket; and he looks up at the clock and sees there is still twenty minutes to playtime—oh, endless and unrelenting time—and then he tries to fix his burning eyes upon his book again, once more to grind out "Fürchterlich, terrible, Fürchterlich, terrible, Fürchterlich, terrible . . .", once more to swoon, once more to look at the clock—oh, mercy, nineteen minutes more!

Do not grind like that, dear boys! Take the word Saal; look at it; shut your eyes; repeat it audibly and visually three times without thinking of the meaning. You have already noticed that it means a room, but do not dwell on that. Dwell on the mere sound of Saal, and look out for familiar words that sound something like it. You may think of sale, salt, and saloon—ah, that is the best word, Saal is like saloon, which is a kind of room. Then repeat Saal three times while thinking of the room. Do not think merely of the *word* room, but think of a room known to you. Then take Schutz, meaning protection; repeat it three times, thinking only of the sound. Think of some words that sound

like Schutz, say shut or shoot. Do you not protect a thing by shutting it up? Do not the soldiers, who shoot, protect us? Once more repeat the word three times, thinking of the idea.

Schön is like shining—beautiful; and for Trennung you might think of a trench or chasm which separates, separation; and for Fürchterlich, fear-like. Always repeat three times, and always think of the connexion, such as: the soldier, who shoots, *protects* us from aggression.

Now I will give a few words from the Spanish—

Mesa, a table—mess; libro, a book—library; ventana, a window—ventilation; verde, green—verdure; tiene, he has—tenant; levantar, to raise—lever; escribir, to write—scribe, and so on.

As another example, a few words from the Russian—

Koleso, a wheel—kaleidoscope; komar, a mosquito—no comrade; derevo, a tree—a country drive among trees; bratstvo, brotherhood—fraternity; palatko, a tent—not a palace; skala, a rock—scale it; osel, a donkey—O slow one; reka, a river—yes, if rocky and rapid it may be a wrecker; lozhka, a spoon—food lodges in it, temporarily; molot, a hammer—moulds hot iron to shape; nasos, a pump—noses are air pumps; and so on.

The words that must be learned are not always quite so easy as these, but if you practise this like a puzzle-game for some time, you will be able to find something for every word. Preferably take the accented syllable of the word that you are going to make. Let us take some difficult words from Sanskrit, as an illustration. They are difficult because they are very unfamiliar, and because they sound somewhat different from English words.

Kama which means passionate desire, sounds like “calm,” and you might think in the form of a contrast, “When a man gives way to passionate desire he is not calm.” Karma, which means work, sounds somewhat like “cream.” Cream is

made into butter by constant motion—or work. Sharira, which means body, sounds like “sharing”: we can share with others in bodily work and the produce thereof. Or again, it sounds like “shear”: wool is sheared from the body of the sheep. Manas means mind—man has a mind. Prana means vitality; you may think of a high-spirited horse, prancing along, full of vitality. Surya means the sun; it sounds something like “sower.” The sun stirs up the life of all the seeds that are sown in the ground.

But really, these are too easy; let us try something more difficult. Indriya, which means sense-organ, sounds like india-rubber, which has no sense! Jagat, the universe. The universe is jogging along all right. Raja, a king. A king is nearly always rich. Bhakti, devotion. The devotee bends his back when worshipping. Saundarya, beautiful and graceful. A sound and healthy body is beautiful and graceful. Naga, a snake. Always catch a snake by the neck. Kshira, milk. The wool that is sheared from sheep is as white as milk. Kshatriya, a warrior. A warrior shatters his enemies.

Expressing the connexions in briefer form we may use our four roads of thought. It is an additional aid to memory to discover and name the roads when associating two ideas—not that the roads are to be remembered, but the two things are automatically held in close proximity while you are trying to identify the road. Thus—

Harmya, a palace—harm, (Road I), luxury, (Road II), palace. Pada, a foot—pedal, (Road IV), foot. Karna, an ear—cornea, (Road II), eye, (Road I), ear. Grama, a village—gram, (Road IV), agriculture, (Road II or IV), village. Kama, passion—calm, (Road I, contrast implying similarity), excitement, (Road I), passion. Pushpa, flower—bush, (Road II), flower. Madhu, sweet—mad, (Road IV), intoxicated bear, (Road IV), honey, (Road III), sweet.

I have looked through my Sanskrit dictionary for half an hour, and have failed to find one word that could not soon

be resolved in this way. We might take the most difficult words from Latin or Greek, or, I think, any European language, and we should find them much easier than the Sanskrit.

You will discover that by this method you can happily and easily remember quite a large number of foreign words in the course of an hour, and your memory will not be burdened afterwards by all the fancies in which you have indulged; yet you will remember the words better than if you had learned them by rote. As a matter of fact, you really get to know the words as usable things when you read a number of books in the language or practise conversation in it. The real difficulty which you will have to encounter at the beginning is that of introducing the unfamiliar words to your mind.

To show how even the most difficult words can be dealt with, we may form uncouth words, such as the following, at random. Let labagart be synonymous with tametac, emattle with revilog, ebpetag with thodge, nadard with smecia. We might associate them thus: Labagart—lovely cart—market—fruit—tomato—tametac; emattle—metal—rifle—revilog; ebpetag—potato—cottager—cottage—thatch—thodge; nadard—adder—field—labourer—smock—smecia.

If for the sake of exercise, or for amusement, you wish to remember a long, uncouth word, such as hturtnahtrehgih-noigileronsiereht, you can easily do so by forming a series of words such as the following: hat; upper; ten; ah; tower; eh, gari (cart); hen; obi (magic); gai (cow); love; rao (king); ness (nose); isle; rope; height. It will be noticed that each word of ours represents two letters of the long uncouth word—the first and last letters only being taken into account. Thus one can do a thing that most people would think well-nigh impossible for an ordinary brain; though, like many things generally regarded as more dignified and respectable,

it has no particular value beyond the exercise that it provides.

In some languages we have the additional trouble of *genders* in the nouns. There are several ways to assist the memory of these. The student may keep lists of masculine nouns in red ink, feminine in green, and neuter in black.

Dr. Pick, a famous mnemotechnist who wrote about seventy years ago, recommended the student to learn the exceptions. For this, however, one must have a teacher or expert who will be accommodating enough to make a list. When teaching the French language Dr. Pick wrote that *except* for the following words all nouns having these endings are masculine.

Amitié (friendship), *moitié* (half), *pitié* (pity), *forêt* (forest), *paix* (peace), *fourmi* (ant), *merci* (mercy), *brebis* (sheep), *souris* (mouse), *vis* (screw), *perdrix* (partridge), *eau* (water), *peau* (skin), *chaux* (chalk), *faux* (scythe), *glu* (glue), *tribu* (tribe), *vertu* (virtue), *toux* (cough), *syllabe* (syllable), *clef* (key), *nef* (nave), *soif* (thirst), *cage* (cage), *image* (image), *nage* (swimming), *page* (page—of paper, not a page-boy), *plage* (plain), *rage* (rabies or violent passion), *tige* (stem), *voltige* (leap), *part* (part), *mort* (death), *foi* (faith), *loi* (law), *paroi* (partition-wall), *dent* (tooth), *jument* (mare), *gent* (race), *faim* (hunger), *main* (hand), *fin* (end).

I have given this list only as an illustration. Similar lists may be formed in other languages. If, however, you have no such list, and no expert available to make one for you, the following method will help. The genders of many words will impress themselves upon your mind without special attention, as in the case of a child who is naturally picking up the language, but there will be a residue which may give you trouble. The items in this residue may be associated with qualities or objects familiarly regarded as masculine, feminine or neuter.

Thus, in Sanskrit, *padma*, a lotus, is neuter; *ghata*, a jar,

is masculine ; mukti, liberation, is feminine. We may then, perhaps, think that the lotus is both bold in pushing its way up through the mud and water to the air, and gentle in resting its soft leaves upon the surface of the water ; so it may be considered neither one nor the other—hence neuter. As to pot—where do you find pot-bellies but in men?—a masculine shape, surely. To avoid earthliness and to seek retirement are feminine virtues, so mukti may be remembered as a word of feminine gender.

CHAPTER IX

PROJECTION OF THE MEMORY

WE have considered and perhaps practised some simple experiments intended to make the imagination vivid and accurate. We have also applied the imagination to learning various things which may be new to us. Let us now consider how to use imagination to help us to remember various things when we want to remember them.

There are plenty of memories in the world which remember a vast number of things, yet are of little use to their owners because they do not deliver just what is needed or wanted at a given time.

An instance of this was very cleverly depicted by Charles Dickens in his novel *Nicholas Nickleby*. The following are the words of Mrs. Nickleby when Stratford-on-Avon, the birthplace of Shakespeare, happened to be the subject of conversation :

“I think there must be something in the place, for, soon after I was married, I went to Stratford with my poor dear Mr. Nickleby, in a post-chaise from Birmingham—was it a post-chaise though? Yes, it must have been a post-chaise, because I recollect remarking at the time that the driver had a green shade over his left eye;—in a post-chaise from Birmingham, and after we had seen Shakespeare’s tomb and birthplace we went back to the inn there, where we slept that night, and I recollect that all night long I dreamt of nothing but a black gentleman, at full length, in plaster-of-Paris, with a laydown collar tied with two tassels, leaning against a post and thinking; and when I woke in the morning and described him to Mr. Nickleby, he said it was Shakespeare just as he had been when he was alive, which was very curious indeed. Stratford—Stratford. Yes, I am

positive about that, because I recollect I was in the family way with my son Nicholas at the time, and I had been very much frightened by an Italian image boy that very morning. In fact, it was quite a mercy, ma'am, that my son didn't turn out to be a Shakespeare, and what a dreadful thing that would have been!"

And this was one of her memories about dining:

"It's very odd now, what can have put that in my head! I recollect dining once at Mrs. Bevan's, in that broad street round the corner by the coachmaker's where the tipsy man fell through the cellar flap of an empty house nearly a week before the quarter-day, and wasn't found till the new tenant went in—and we had roast pig there. It must be that, I think, that reminds me of it, especially as there was a little bird in the room that would keep on singing all the time of dinner—at least, not a little bird, for it was a parrot, and he didn't sing exactly, for he talked and swore dreadfully; but I think it must be that. Indeed I am sure it must."

But suppose we have a person of good memory, whose mind has not been allowed to drift, as presumably that of Mrs. Nickleby had done throughout her life, and the conversation turns to the subject of elephants. Then perhaps that mind in an instant will say to itself, without words: "The elephant is a large, vegetarian, mammalian, quadruped animal, inhabiting Ceylon, India and Africa." And in a moment more that mind will slide its fingers along each word of that definition, and at once a great deal of information will become available on each point.

Such a memory is like a dictionary having more cross-references than it would be possible ever to obtain in a printed book; furthermore, a dictionary which will always open at the word or idea which you want.

It sometimes happens in practice that a student has to remember a number of things which he may put in any order he chooses, as, for example, lists of foreign words. But more

frequently a certain predetermined order is required, as in learning historical series of events, or in committing to memory heads of a lecture or book. This occurs often in practical life, where one may require in the morning to remember a number of things to be attended to during the day.

In this case it is obvious that the subjects will not fall into an order serially connected in the way which we have already illustrated, so we must devise some means whereby the items will suggest each other in their order. Generally these things have no immediate or direct association. If, then, an effort is made to remember them together, it usually fails—for there can be no leap in consciousness; each idea must follow another directly connected with it by one of the roads I have described.

I will take as an example a gentleman of long ago who was going into town and wanted to carry out the following items of business—

- (1) To purchase some barley at the market;
- (2) To hire a labourer for some building alterations;
- (3) To keep in mind the proverb that a bird in the hand is worth two in the bush (since former experience had taught him the value of that maxim);
- (4) To buy some aromatic spices at a grocer's;
- (5) To call to see a lawyer about a friend's suit in Chancery;
- (6) To buy some velvet;
- (7) To collect some money due.

Many people would write these items down, but it is far better that we should remember our own business, as we all know that notebooks weaken the memory.

In this case, we have to remember the following ideas in succession; barley, labourer, bird, spices, Chancery, velvet, debt. The best method for this purpose is to insert one or two intermediaries where there is no direct association.

- (1) Barley—harvest—
- (2) Labourer—gamekeeper—
- (3) Bird—bird-seed—groceries—
- (4) Spices—red pepper—red-tape—
- (5) Chancery suit—chancellor—robe—
- (6) Velvet—smooth—slippery—debtor—
- (7) Debt.

I have not troubled to print the associations or Roads of Thought, as the reader or student will easily see them if he wishes to do so.

I must mention that this process is not artificial. It actually occurs in the mind—though generally sub-consciously—when two unrelated things are remembered in sequence.

In practice, the extremes, say barley and labourer, are considered; an effort is made to work forwards from barley and, as it were, backwards from labourer, until the two meet. It is then found that there is rarely any necessity for more than two intermediaries.

Having formed our connexions, we may repeat the series a few times, and presently the intermediaries can be dropped out of mind and the series will be remembered without them, as they are only a temporary aid to bring the pairs of ideas together.

The recall of such a series is made easier when the mood in which they were originally associated is revived, so when trying to revive an impression go back in imagination and put yourself into the mood in which you originally received it. You may have been to a lecture, which you now wish to remember. First recall the mood, the whole attitude of the attention, as it was at the time given to the lecturer, to the subject of the lecture and to its different parts in turn. It will be quite impossible for you to recall the succession of the ideas of the lecture if you are at the same time thinking of what you will have for dinner, what so-and-so has been

saying about you, how you will carry out such-and-such a plan, what a cold day it is, or what a noise the people round about are making. A certain kind of indifference is essential for success in this practice.

The student practising the repetition of a series of ideas such as has been described is recommended to notice with the greatest care exactly what takes place in his mind when he comes to an obstacle in the process, and finds himself unable to remember the next link of the chain. At once the attention darts off in a new direction, taking up another line of ideas of its own. This indicates not so much lack of memory as a change of mood. If the new mood is overcome and the mind is forced by the will into the original one, the attention is bound to go in its original direction, for the mood determines the path of least resistance for it.

This device of intermediaries is excellent for remembering the sequence of ideas in a speech or lecture which you may propose to deliver.

So far I have written about associating two ideas together in the mind. It is also practical to associate an idea with an actual thing instead of with another idea. This is particularly useful with reference to the future, when you wish to do something in some place or at some time.

Sometimes a business man is asked to purchase some little thing in town for his wife, and bring it home in the evening. Very often, it must be confessed, he forgets. One device by which he may remind himself that there is something to be done is to tie a knot in his handkerchief, so that it will remind him of his commission when he pulls it out of his pocket. But it would be a better plan for him to associate the idea of the thing to be done with some *object* which he is sure to see during the day.

In practice, we are all being reminded all the time of many things by the objects which surround us. It is as if they were plastered all over with thoughts and those thoughts

leapt out at us when we see the objects. To illustrate this fact, take out your watch and look at it for a few minutes, keeping your thoughts still and attentive, and observe the little pictures that arise involuntarily in the mind. You will probably find an image of the person who gave you the watch or of the shop where you bought it, and pictures of any special incidents in which it has played a part. The numbers on the dial will remind you of the different duties and appointments of the hours throughout the day; while the qualities of the watch, the substances of which it is made and the accessories which are associated with it, radiate ideas in all directions, as do the ideas which we have mentioned in earlier chapters.

All the articles that we possess are similarly full of thoughts—the rooms, the houses, the streets that we enter, are saturated with them. There is thus a process, going on for the most part unconsciously, by which the mind of man, except at moments when it is under the active control of the will, is constantly influenced by his surroundings.

This process can be employed for remembering things that are to be done, so that at the right moment they will enter the mind, without our being put to the trouble of recalling them again and again before the appointed time. The memory may thus be cast forward, as it were, by our linking the idea we want with an object that we are sure to come across and notice, and in the process we shall be free of the waste of mental energy necessitated when the idea is kept half consciously in the mind throughout the interval.

Suppose, for example, you wish to remember to send a letter to Mr. Blank, when you arrive at the office. There is no need to worry the mind by continually thinking about the matter, nor to weaken it by taking a note. Simply make a clear picture of your office, project your thought there, as it were, with Mr. Blank sitting there conversing with you,

and when you arrive at the spot the image will naturally rise up in your mind.

If during your journey by railway into town, you wish to consider some problem in electricity or in finance, fix your idea on the lighting apparatus or on the costly upholstery of the compartment; when you step into the train, these things will catch your eye and remind you of the problem.

It is possible thus to hang images on prominent signs, shop and house fronts, monuments and other noticeable things you are likely to pass, and to fix ideas on the books, pictures, furniture and clothing you are likely to use. There remains in the mind a kind of latent or subconscious expectancy which will notify you on the slightest signal from the determined object. When the memory is discharged this latent expectancy ceases, the association is broken, and the object is left free for future associations.

Various special ways of fixing ideas on objects will naturally occur to the student. If I need to remember, for example, that I want to send a clerk out to buy a new pair of compasses, I can associate the idea by making a picture of myself writing a letter A at my desk and noticing that that letter resembles a pair of compasses. As soon as I sit down to write I shall be reminded of the intention. This purpose must be forthwith discharged if the method is to be employed again, for unless we are faithful to our memory it will not long be faithful to us.

Or again, suppose I want to look up a certain question in chemistry. I know that when I go to my room for the morning's work, which consists chiefly in writing, I shall use my fountain pen, which is lying there. I picture myself picking up the pen and noticing the gold nib, which reminds me of alchemy, and that in turn revives the idea of chemistry. I know that when the time comes my memory will present me with the idea I want, because we have much confidence in each other—my memory and I.

This principle may be allied to the instinct by which one awakens oneself from sleep in the morning at a time predetermined before retiring for the night. I have had to do that frequently when travelling in India, and have found that confidence is justified. But I have noticed several times that when my watch was wrong the instinct awoke me by the wrong time of the watch, not at the proper time.

CHAPTER X

SIMPLIFICATION AND SYMBOLIZATION

WHEN memorizing lists of things of any kind it is often an advantage to simplify very complex ideas and to symbolize abstract ideas.

A good example of symbolization is related with reference to the Greek poet Simonides, who was one of the earliest known exponents of aids to memory. He invented, among other things, a simple device for committing to memory ideas which do not represent objects of sense, and are therefore difficult to remember. For example, in preparing a discourse concerning government, financial matters, naval affairs, and the necessity for wisdom in the policy of the times, he would not try to memorize those topics or paragraphs of his discourse in these general terms, but would represent each by a symbol—a crown or sceptre, a current coin, the image of a ship, and the figure of Minerva respectively.

When preparing such images or symbols we should always take account of their qualities, as already explained, to make them as natural and lively as possible. I take an extract on this point from a work written by John Willis, B.D., of Magdalen College, Oxford, which was published in 1618 in Latin and translated into English in 1661.

“Ideas are to be vested with their proper circumstances, according as their natures require; for as *writings* the fairer they are, are more facilely read; so *ideas*, the more aptly they are conceived, according to the exigency of their natures, are more speedily recalled to mind; and also consequently the things by them signified.

“*Motion* is to be attributed to ideas of movable things; *quiet* to ideas of quiet things and good and evil savours to

ideas representing things so qualified. Examples of movable ideas are: artificers at work in their shops, women dancing, trees shaken by the wind, water running from taps, and such like. Ideas of quiet things are: hens laying in their nests, thieves lurking under bushes, etc.

“Ideas to which sound is ascribed are: a lion roaring, a bell ringing, whistling, the rustling of trees, a chorister singing, etc. If incense burning be used for an idea, a sweet and pleasant odour must be attributed thereto; but, on the contrary, to vaults underground, a dank unwholesome smell is to be assigned. So also, ideas of merry men require cheerfulness of countenance, of sick men paleness and sadness.

“After this manner ideas of edifices, machines, and all artificial things whatsoever, ought to be signalized; proportion of form and splendour of colour must be attributed to pictures, grace and liveliness of letters to writing, glory and excellence of workmanship to engravings. Finally, every idea must have such illustration as may render it most notable and conspicuous and seem principally coherent to its nature.”

The quantity and position of ideas should also be observed. In imagining small things, such as an ant, a grain of rice or of sand, or a drop of water, it is well to picture an army of ants, a bagful of rice, a sandy shore, or a flowing river, respectively. On the other hand, to represent highly complex pictures, such as a battle, or a large block of buildings, it is well to reduce them in quantity or in size, and represent a battle by a few men fighting, a block of buildings by some small erections, a church or a mountain as diminutive, as though seen through the wrong end of a telescope.

As to position, things which are usually hung upon walls, such as pictures and looking-glasses, should be imagined as hanging there; books upon shelves; crockery in cupboards; clothes in wardrobes, in drawers or on the person; tables, chairs, chests and the like standing on the ground; and

graves, wells, wine-cellars, mines and other such things, under the ground.

"The mind of man doth naturally and immediately present direct ideas of all visible things," wrote Mr. Willis, "so that it is vain to excogitate any, but rather use those that offer themselves. If a man hears the account of a naval battle, doth he not presently seem to behold the sea, ships, smoke of great ordnance, and other things obvious in such matters? If speech be made of mustering an army, doth not the hearer form in his mind the effigies of a field, replenished with soldiers marching in military postures? "

To this standard of direct imagination we may easily reduce complex or abstract ideas. The landing of Julius Caesar may be represented by a few ships approaching the shore, their owners being repulsed by rough Britons. Athletics may be represented by a ball; education by a black-board; art by a statue or a picture; music by a violin; the theatre by a mask; horse-racing by a jockey's cap. Cold may be represented by ice; heat by fire; light by a lamp; love by a heart; pride by a peacock; gluttony by an ostrich; melancholy by a sad man; the spring time by green meadows and flowering trees; winter by houses, trees, and the earth white with snow and rigid with frost. We are all familiar with the figure of Justice, the veiled virgin with her sword and balance, and old man Time with his scythe and forelock, and his merciless wings.

To conclude these remarks let me give some complex examples to show how ideas relating to incidents or stories should be made in concrete form, not in mere words. This point should be especially important to students of history—

"Milo of Croton, a famous wrestler, first crowned in the Olympic games, when through age he had left off his youthful exercise and was travelling through some woodlands of Italy, espied an oak near the way rifted in the middle. Willing to try whether any of his ancient vigour remained,

he thrust his hands into the cleft of the tree, to rend down the middle part. But as soon as his violence ceased, the oak, thus forcibly writhed, returned to its pristine estate and, closing fast upon his hands, detained him a prey for wild beasts.

"Fancy a cleft oak, full of green leaves and acorns, in the cleft of which a strong great-limbed man, crowned with laurel, is fast held by the hands. Bending back his head and body he cries out so loudly that you really seem not only to see his wretched body and the beasts preying about him, but also to hear his outcries and lamentations."

"In the year 1530, in the time of Charles V, Emperor, the German Princes exhibited their Confession of Faith at Augsburg, with a solemn protestation because of that perilous time—whence afterwards they, and all such as embraced the same Confession were called Protestants.

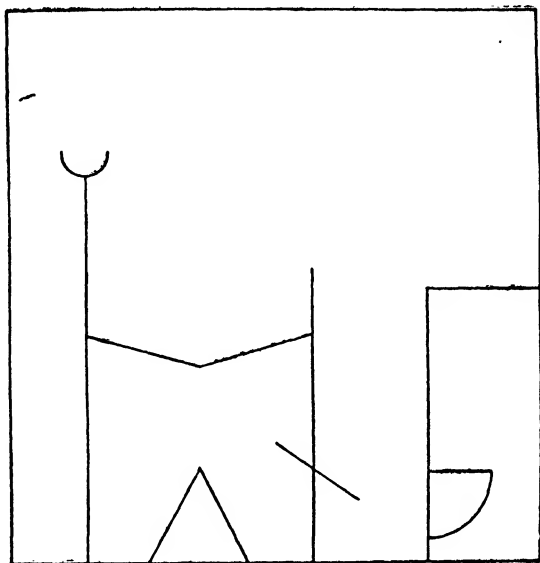
"Suppose an Imperial throne, adorned with badges of the Empire, glittering with gold and gems, upon which sits the Emperor, crowned with a golden diadem, while to him his nobles, bare-headed, present their Confession fairly engrossed on paper."

M. Gregor von Feinaigle—a memory expert, whose *New Art of Memory* was published in London in 1812—carried the process of symbolization to a new point when he recommended students to make outline-and-symbol sketches instead of writing notes, in many cases. The diagram on page 69 is an example.

The explanation of this was as follows—

"A convention was entered into in Egypt, between General Kleber, on the part of the French, and the Grand Vizier, on the part of the Sublime Porte, which was approved by the Cabinet of London. The straight line with the crescent on its top denotes the Grand Vizier, by its superior height to the perpendicular line which is to represent General Kleber; the line drawn through the centre of this line, forming acute

angles, is intended for the General's sword. To denote the convention two lines are drawn, which meet together in the centre, and represent the shaking of hands, or a meeting.



The convention was formed in Egypt, which is signified by a pyramid. The Cabinet of London is typified by the outline of a cabinet on the right of the diagram; the head of a ship placed in the oblong denotes London, as it is frequented more than any other port by ships."

SECTION III

THE ART OF THINKING

CHAPTER XI

MODES OF COMPARISON

IN studying imagination we have seen that one thought or idea arises in connexion with another as a result of previous experience in which those two things have been closely connected. For example, an elephant might remind us of a zoological garden that we have known, or of the teak-wood forests of Burma. When this happens, however, there is no mental act of comparison between the elephant and the zoo or between the elephant and the teak forest. Their relationship is a case of proximity in the world of sense-objects. They simply happened to come together, just as a tree may grow on a mountain. The connexion is a matter of chance.

But when comparison between two things occurs, you have something more than experience and imagination. Then reason has arisen.

Because of the logical constitution of our minds we are capable of comparing any two things that exist. This comparison consists of two parts—we take note of the particulars in which the two objects resemble each other, and also of those in which the two differ from each other.

If we did not note the difference as well as the resemblance, there would be no comparison. The two things would be exactly the same. Suppose we compare a horse and an ordinary table—to take a rather far-fetched example. Well, you may laugh, but both are quadrupeds. Among the differences, which are many, the most striking is that one can move by itself and the other cannot.

It is not usual for us to need to compare such unconnected things. In practical life a carpenter might receive an order to make a chair and a stool. To do this he must be able to compare them; they are both articles of furniture to sit

upon, but generally they differ in that one has a back and the other has not.

Another common comparison would be between a tree and a bush. I am not an expert botanist, so I can suggest only a very ordinary comparison—that while both are growing and woody plants, one has a long stem raising its foliage some distance from the ground, and the other has not.

Another element of reason is the perception of causes and effects. Very often, however, what people call causality is simply an example of contiguity in time. For instance, it may be said that gluttony is the cause of indigestion, and that fatigue is the cause of sleep. What we really mean is that we have observed that gluttony is generally followed by indigestion and fatigue by sleep. But really the cause is the peculiar physiological constitution of the animal or man; some creatures can stuff themselves with food to the limit, with no ill effects, and some of our muscles—for example the heart—never sleep. In common talk we say that if a lamp is brought into a dark room the light in the room is the effect of the lamp. It is not in a logical sense, but only in a popular sense, that the lamp can thus be called the cause.

A very ignorant person observing that day is always followed by night, and night by day, might think that day is the cause of night, and night again the cause of day. But the real cause is something which holds both the elements of the sequence in its grasp—the rotation of the earth in relation to the sun. If I say that the rotation of the earth is the cause of day and night, I have performed a rational act, in the department of causality.

The present section of our study will deal chiefly with the **rational** connexions between successive ideas in the mind. We will not separate them entirely from the imaginative connexions already considered, because, as the mind moves on from one idea to another, sometimes it proceeds by a rational road and sometimes by one directed by imagination.

I have already presented the student with an outline of the four Roads of Thought, and explained that three of them involve rational acts of comparison while the fourth relates to strong impressions on the imagination through the senses. Objects coming together in the mind are thus connected either by **comparison** or **contiguity**. To avoid any possible confusion of these two, I will now give more examples of contiguity; the student will then be in a position to ignore all cases of contiguity while studying the three roads of comparison, with their subdivisions.

Contiguity. When I think of a banyan tree, at once I also think of the huge tree outside the window of a room where I used to write, and of the squirrels and crows which thronged its branches. A banyan tree is not necessary to the idea of squirrels, nor are they any part or connexion of a banyan tree, nevertheless, these have been so closely associated—quite accidentally—in my experience that the thought of either now evokes a picture containing both. There are probably few of us who can think of the Duke of Wellington without some vision or idea of the battle of Waterloo; or again of Napoleon without some thought of Corsica or of the island of Saint Helena, because these are always pictured together in history; yet they are not necessary associates. A thought of William the Conqueror is almost inseparable from another of the village of Hastings, not because these are necessarily connected, but because they are vividly, though accidentally, presented together in experience. Another case is that of George Washington and the cherry tree.

Similarly we all remember incidents connected with the places where we have lived, the countries, towns, houses, rooms, furniture, people, accidents of every kind—an immense collection of incidents. For me, many events of childhood can be recalled and placed in their proper relation and sequence by their connexion with the houses in which I

lived at different times. It is a personal matter, in which the contents of my mind are bound to differ from those of others. Again the idea of elephants is for me particularly associated with the city of Baroda, because when I was there for the first time I was each night awakened by an imposing procession of them passing the balcony on which I lay. For many people it is, no doubt, more closely linked with pictures of the zoo, of great wooden bars and the ringing of bells for pennies and biscuits.

More familiarly, pen is associated with hand, boots with feet, carriage with horse, ship with sea, sleep with bed, spade with garden, letter with post office, cow with grass, and so on to an unlimited extent. Yet all these pairs of ideas have purely accidental connexions, the members of each pair having no comparative relationship with each other. They are contiguous, having a relation for sense or imagination, but not for reason.

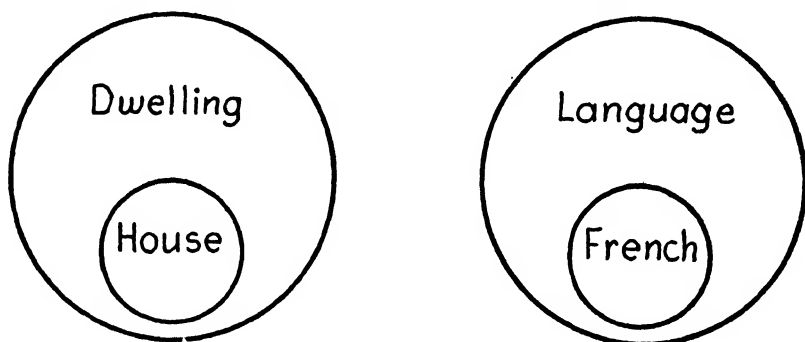
It is different, however, with banyan tree and hanging roots, squirrel and bushy tail, crow and black colour, Wellington and Napoleon, cherry tree and blossom, cow and horse, possibility and impossibility, house and room, elephant and trunk, Bombay and Baroda. All these have a relationship of **comparison** of some kind. A banyan without its roots, or an elephant without its trunk, would be incomplete ideas, while cows and horses, Wellington and Napoleon, Bombay and Baroda, obviously **resemble** each other in their respective pairs.

Let us now examine more in detail the first three Roads of Thought—those concerned with **comparison**; the first Road can be conveniently subdivided into three, and the second and third into two each—

I. Class

A. This occurs when one idea includes another because of a principal characteristic which one has in part and the

other in whole. It may be otherwise expressed as the connexion between an object and the class to which it belongs. Examples are: animal and cow; Englishman and man; dwelling and house; drink and tea. We may symbolize the relationship by one circle within another, thus—



B. This occurs when two ideas or objects have a principal characteristic in common, that is, when two objects belong to the same class. Examples are: cow and horse (both animals); chair and table (both articles of furniture); red and blue (both colours); daisy and buttercup (both flowers); train and ship (both means of transport); box and bag; snow and ice; father and son; beech and oak. We may symbolize the relationship by two circles overlapping, as shown in Fig. B page 78.

C. This occurs when two ideas or objects have a principal characteristic in common, but express opposite degrees in regard to it. Examples are: hot and cold (both temperatures, but opposite); up and down (opposite directions); animate and inanimate; curvilinear and rectilinear; fire and water; light and darkness; sage and fool; king and peasant. We may symbolize the relationship as shown in Fig. C page 78.

2. Part

A. This occurs when two things or ideas are respectively whole and part of some natural object or idea. Examples

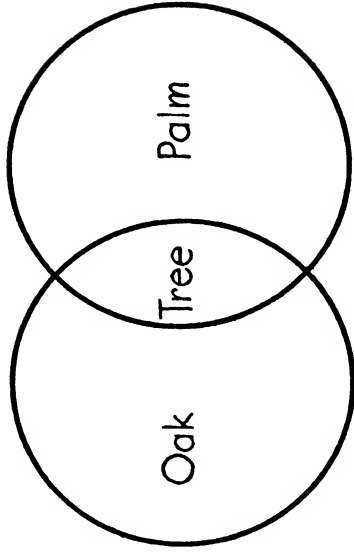
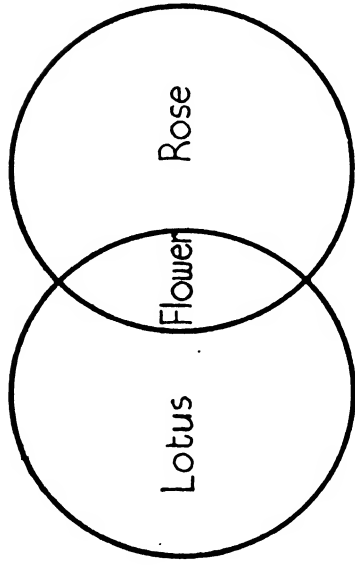


FIG. B

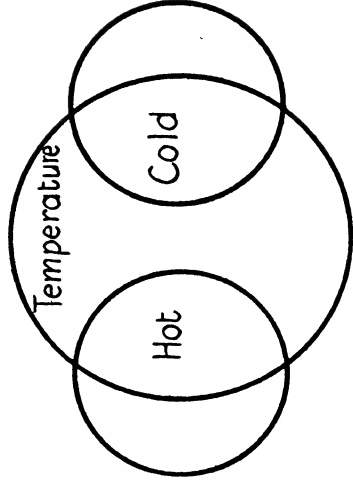
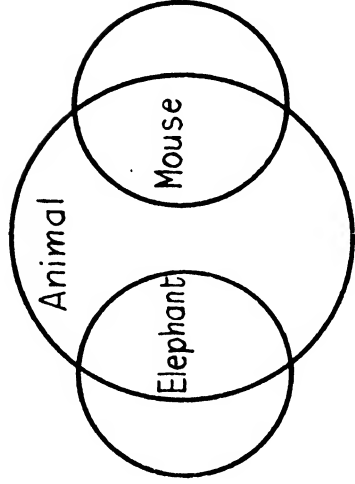
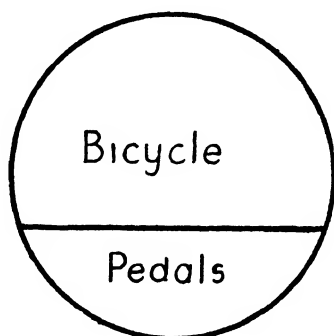
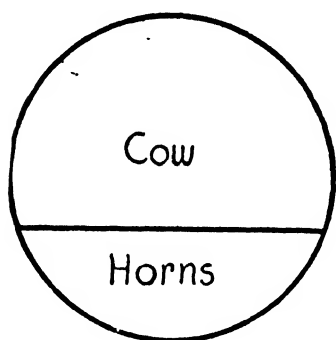
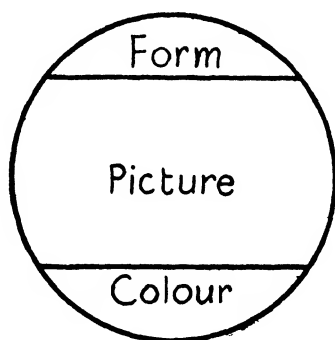
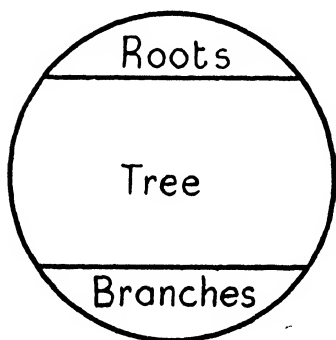


FIG. C

are : tree and branch ; whale and blubber ; Bengal and India ; sea and waves ; book and page ; box and lid ; cow and horns ; bird and wings ; ten and five ; river and water. We may symbolize the relationship thus—



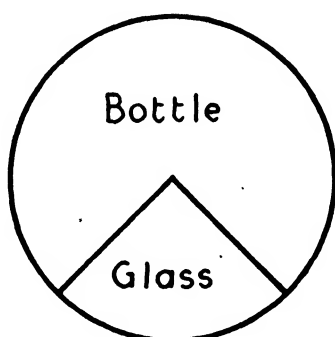
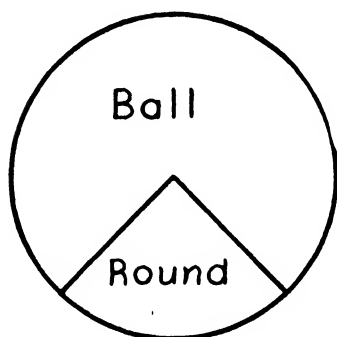
B. This occurs when two ideas or objects are different parts of the same whole. Examples are : hull and sails (of a ship) ; thumb and finger (of a hand) ; root and branch (of a tree) ; nerves and muscles ; stairs and door. We may symbolize the relationship thus—



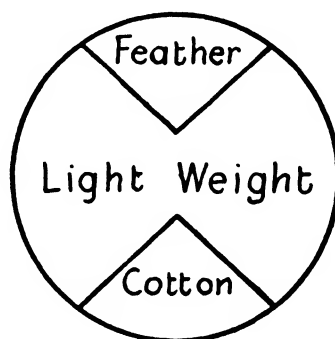
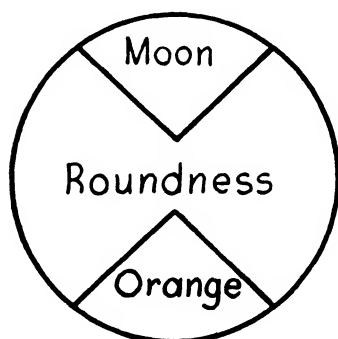
3. Quality

A. This occurs when two objects or ideas are related as object to quality, or substantive to adjective. Examples are : lead and heaviness ; snow and whiteness ; fire and heat ; ball and round ; bottle and glass ; coin and gold ;

bag and leather. We may symbolize the relationship thus—



B. This occurs when objects having the same prominent quality are linked together by some striking feature possessed by both, the feature not being their class, but a quality of each of them. Examples are: moon and orange (both round); paper and snow (both white); ink and negro (both black); feathers and cotton (both light); church spire and factory chimney (both high). We may symbolize the relationship thus—



This completes our seven logical connexions, which, with Contiguity or Proximity subdivided into Co-existence and Succession, make a total of nine. In practice, however, it will nearly always be sufficient to classify a connexion as belonging to one or other of the four Roads of Thought: Class, Part, Quality, or Proximity.

CHAPTER XII

A LOGICAL SERIES

It often happens that a student requires to remember a series of things. The days are gone, I hope, in which children are expected to reel off the names of all the kings and queens of Israel or of England, or of the capes on the coasts of Europe, Asia, Africa, or America. But it does often happen to anyone to be a convenience to be able to memorize a series of foreign words. Thus we might put together in suitable order the exceptions given by Dr. Pick as a mnemonic for the genders of French nouns, referred to in Chapter VIII.

The reader will readily see why I have said "in suitable order" if he remembers our experiment with a series of ideas in Chapter II. In that case he or she must have found that it was easy to remember cat—milk—dairy—shed—roof—top—head—eyes—reading—book—paper—white—moon—sun—glory—fame, but almost impossible to remember moon—dairy—head—paper—roof—milk—fame—eyes—white—reading—shed—glory—cat—top—sun—book, although the words are the same in both the series.

Let us then run over the easily remembered series, taking two at a time in order, and notice the Roads of Thought which made the remembering easy—

Cat and milk (Proximity);
milk and dairy (Proximity);
dairy and shed (Part);
shed and roof (Part);
roof and top (Class);
top and head (Class);
head and eyes (Part);
eyes and reading (Proximity);
reading and book (Proximity);
book and paper (Quality or Part);
paper and white (Quality);

white and moon (Quality);
 moon and sun (Class);
 sun and glory (Quality);
 glory and fame (Class).

All these links could be expressed in a more familiar way by simply making sentences to connect each pair of words. That might be more convenient for a mind quite unaccustomed to scientific methods and formulae. Nevertheless, the method is *not as good* as that of naming the Road between each pair, because the act of pausing with the two ideas before the mind while finding the name of the Road connecting them creates a momentary concentration on the two ideas together, which is the chief cause of their being afterwards remembered together.

However, for those who wish simply to make sentences I will lay down the following two rules—

1. When you link two ideas together, always give a *clear* reason for their association.
2. Never invent any unnatural reason.

I will now illustrate these rules by the following 'series':
 Yellow — gold — iron — rails — railway — steam — water
 — ice — snow — soft — fur — skin — hand — pen — paper.

Yellow and gold; because gold is of yellow colour.

Gold and metal; because gold is a metal.

Metal and iron; because iron is a metal.

Iron and rails; because rails are made of iron.

Rails and railway; because rails are part of a railway.

Railway and steam; because there is steam traction on most railways.

Steam and water; because these are two forms of the same thing.

Water and ice; because these also are two forms of one thing.

Ice and snow; because they are forms of the same thing, and are often found together in winter.

Snow and soft; because snow is very soft.

Soft and fur; because fur is very soft.

Fur and skin; because the fur is attached to the skin of the animal.

Skin and hand ; because the skin is part of the hand.

Hand and pen ; because we hold a pen in the hand when we write with it.

Pen and paper ; because with a pen we usually write on paper.

Putting some of these in a different order we could make a more difficult example: water—paper—railway—gold—steam—fur—pen—snow—metal—skin. The connexions by sentences might be somewhat as follows—

A sheet of paper is smooth like the surface of calm water. Or, water is used in making paper pulp. What is the connexion between paper and railway? Sometimes carriage wheels are made of compressed paper-pulp ; also everybody must be familiar with the forms of the book-stall boys running about in the big railway stations, selling their bundles of papers. Next come railway and gold. Here it would be rather unnatural to think of railway trucks heaped up with gold ; it would be better to observe that the railway companies are immensely rich and that much gold passes through their hands. How is gold related to steam? The use of steam power has increased the wealth of humanity enormously, and wealth is represented by gold. The next pair is steam and fur. Furs are warm ; warmth produces steam from water, or let us say, steam issues from a hot place, such as a volcano, while the most valuable furs are obtained from the cold latitudes, there being a contrast between the two ideas in this respect. We come to fur and pen. The hair of animals is used (among other things) for making artists' brushes, or "pencils," and the brush and the pen are akin, since both are used for the same purpose, that of writing and drawing. We might associate these two in another way. Fur and feathers are the coverings of animals and birds, respectively, and a quill pen is made from the feathers of a goose. As for pen and snow, let us say the feather of a quill is as white as snow. In deference to rule 2 we must, of course, avoid making an idea such as "I find a pen in the snow," or "I see a

snow man eating a fountain-pen." Such ridiculousities have no part in the true art of memory. Snow can be connected with metal because one is soft, the other hard. Metal can be connected with skin on the ground that knights of old used to wear metal armour and though as a rule it did not touch the skin, it was, as it were, a metal skin to the body. A good alternative is the idea that the skin of a ship is nowadays made of metal.

As an illustration of the use of the Roads in remembering a number of words I will take the collection of French nouns given in Chapter VIII. Dr. Pick put them in the following order, which he considered the most convenient that could be made with these specific words. I will, however, give my own Roads of Thought, as I consider them an improvement upon the various associations of thought put forward by many teachers of mnemonics during the last few centuries.

I give the English words, in order to present the meanings so plainly that he who runs may read, but let the student of French repeat the series to himself only in that language. To emphasize the importance of isolating each pair of ideas and thinking of only two at a time I will show the series in tabular form.

- Conjoin tooth with rabies (Proximity);
 „ rabies with pity (Proximity);
 „ pity with mercy (Class);
 „ mercy with end (Proximity);
 „ end with peace (Proximity);
 „ peace with law (Proximity);
 „ law with faith (Class);
 „ faith with virtue (Class);
 „ virtue with friendship (Class);
 „ friendship with nation (Proximity);
 „ nation with tribe (Class);
 „ tribe with ant (Class);
 „ ant with mouse (Class);
 „ mouse with sheep (Class);
 „ **sheep with leap** (Proximity or Quality);

Conjoin leap with mare (Proximity or Quality);
 „ mare with partridge (Class);
 „ partridge with forest (Proximity);
 „ forest with stem (Part);
 „ stem with part (Class);
 „ part with half (Class);
 „ half with page (Class—half a leaf);
 „ page with syllable (Part or Proximity);
 „ syllable with image (Class—all words are symbols).

For the remainder of the series I will leave the student to find the Roads for himself or herself, as an exercise.

Conjoin image with water;
 „ water with swimming;
 „ swimming with cough;
 „ cough with thirst;
 „ thirst with hunger;
 „ hunger with death;
 „ death with scythe;
 „ scythe with hand;
 „ hand with skin;
 „ skin with plain;
 „ plain with nave;
 „ nave with partition-wall;
 „ partition-wall with chalk;
 „ chalk with glue;
 „ glue with cage;
 „ cage with screw;
 „ screw with key.

The reader may wonder why I have so much insisted that only two ideas be taken together. The answer is: Because the ability to forget or put things out of mind is essential to a good memory. If you want to remember something new to you you must, at least for a moment, concentrate upon it in relation with something which is already familiar. It is impossible to obtain that concentration while you are trying not to forget something else. To emphasize still further this necessity for forgetting, I will give one more exercise showing the process—

Animal and cow (Class), forget animal;
 cow and horns (Part), forget cow;

horns and knife (Class or Proximity), forget horns;
 knife and spoon (Class), forget knife;
 spoon and tea (Proximity), forget spoon;
 tea and wakefulness (Proximity), forget tea;
 wakefulness and sleep (Class), forget wakefulness;
 sleep and vigour (Proximity), forget sleep;
 vigour and Hercules (Quality), forget vigour;
 Hercules and Greece (Proximity), forget Hercules;
 Greece and Italy (Class), forget Greece;
 Italy and top-boot (Quality), forget Italy;
 top-boot and highwayman (Proximity), forget top-boot;
 highwayman and horse (Proximity), forget highwayman;
 horse and swift (Quality), forget horse;
 swift and eagle (Quality), forget swift;
 eagle and peak (Proximity), forget eagle;
 peak and snow (Proximity), forget peak;
 snow and cotton-wool (Quality), forget snow;
 cotton-wool and gas (Quality), forget cotton-wool;
 gas and liquid (Class), forget gas;
 liquid and sap (Class), forget liquid;
 sap and bark (Part), forget sap;
 bark and skin (Class), forget bark.

After studying these relationships, close the book and repeat the whole series slowly forwards and backwards. If you have any difficulty in remembering any of them, try every possible device before you consent to look up the list in the book. If in going forward you come to a stop, start from the end and work backward until you meet the difficulty in the rear. If that does not avail, take the word next to the missing one, and ask yourself whether the connexion was one of Class, Part, Quality, or Proximity. The recovery of the last idea is sure by this method. One should not submit to the ignominy of looking up the list, either as an admission of failure, or worse still as a capitulation to mental indolence. The mind should be firmly made to render complete obedience. When repeating the words you need not recall the relationships or linkages, except when a breakdown occurs.

To complete my emphasis upon the placing together of two ideas, let me explain further:

It must be observed that two separate or dissociated ideas will not co-exist in the mind without blending. A new idea can come forward in thought only by linking itself with another already in the mind. If two ideas are brought together, either they will blend into a larger unit, or the stronger will push out the weaker, which will then slip out of attention. Link two such ideas by a third, which is common to both, and at once they will remain together comfortably before the attention.

Picture, for example, in your imagination a pen and a hand separately. Now try to hold these separate ideas at once before the mind. You will find that the attention runs rapidly to and fro from one object to the other, and each is lost in turn; but if you picture the pen in the hand in the act of writing it becomes easy to hold them together without any variation of attention, because they are then really one idea, the two objects having a unity of purpose and action.

The sequences of ideas which we have studied in this chapter may seem somewhat artificial, but really all our life is such a sequence. There has been a continuous succession and if we wish to remember something that has occurred within it we can often do so with the aid of outstanding landmarks by the roadside. The ways of memory are not unlike those of outer experience.

In finding our way about the outer world from one place to another we have three particular guides. We may reach our goal by fixing our eyes on a distant spire or mountain peak, and gradually working towards it, overcoming or circumventing such obstacles as we may find in our path. We may follow out a well-marked road, trusting that it will take us to the place we wish to reach. We may take note of a succession of landmarks, and proceed from point to point with their aid. In a well laid out country these are amply provided. There is no road without landmarks—at this turning an inn, at that a stout and ancient oak tree, at

another a tinkling rivulet, at the next, a farm-house with a barking dog, and children playing in the yard.

In the sequence of memories, also, the roads have their landmarks—ideas each of which leads on to the next and suggests it. With their aid the train of thought can almost always find its way with certainty along the roads and paths which it has trodden before. At the age of six I had a severe illness, at twelve my father removed his home to a new house, at sixteen I went to college—such are the pronounced memories from which most persons would be able to trace out details of the past.

The man of orderly and well-appointed mind finds himself living as in a pleasant, prosperous country with well-kept roads, well-stocked lands and smiling gardens, whether his range be small or large. Another may live in a barren wilderness or jungle twenty times as large, but to move from point to point must cross the arid, thirsty wastes of useless knowledge, scramble over the broken ground of mental rubbish, wade through the pestiferous marshes of ill-associated thoughts, or force his painful way through the tangled undergrowth of confused purposes and ideas. It is, of course, largely these ill-associations that are responsible for bad memories, for when they are numerous the roads and tracks are almost obliterated.

In the following chapter I will try to show how the mind travels, and we may then consider the means to guide its future movement.

CHAPTER XIII

FOOTSTEPS OF THOUGHT

I MUST now remind the student that the mind is dynamic and that it walks as though on two feet. This I have already explained. Sometimes thinking is called a flow of thought. Very good, but I prefer the simile of walking, as that reminds me of the static elements—the ideas or mental images on which the feet of the mind may be thought to step.

This is an important point. Therefore, even at the risk of repetition let me give another example, from my own experience. I start by thinking about a cat. A few moments later I find myself thinking about a very strikingly designed iron bridge that spans the river Indus between the towns of Sukkur and Rohri. I might imagine, if I did not know the laws governing the process of thought, that my mind had leaped from the idea of the cat to the idea of the bridge, that it had merely casually forgotten the first thing and merely casually thought of the other. But if I take the trouble to recall what has happened and to study the matter I shall find that there was an unbroken chain of images leading from the first to the last, that it was on a definite series of stepping stones that I crossed between the two.

I thought of a cat, then of a cat lying upon a hearth-rug before a fire (a very common thing in Europe), then of the hearth-rug without the cat, then of the hearth-rug being made in a factory, then of a particular factory that I knew very well, which was near the river Indus, and then of the scene further up the river where the great bridge already mentioned rises into the air.

As I have said before, the process is just like walking; one mental foot comes down on the idea of the cat, the other moves forward and rests on the idea of the hearth-rug; the

first foot is lifted from the cat and moves forward to the factory. When it is settled there the second foot is lifted from the idea of the hearth-rug and brought down upon the river Indus. Next the first foot is removed from the idea of the factory and settled upon the Sukkur bridge and so on.

The process is also like the beating of the heart. There is first a thought, then it is enlarged by the addition of another; then it is contracted by the elimination of the first. Expansion and contraction of thought thus alternate as regularly as in the beating of the heart. When the expansion takes place consciousness becomes vaguer, for the light of attention is more diffused, because it covers a larger field; but when the contraction takes place the object is vividly illumined and consciousness is at its best in point of quality. The contraction is concentration; the expansion is meditation. The movement is thought.

Now, two things may happen in this process of thought. The attention may simply drift from one image to another with no settled purpose or direction, taking at each step the *easiest* path, following old habits of thought, keeping to the beaten track, or going the easiest way, like a stream of water finding its way down hill. Or it may be set to the work of exploration and discovery in a certain definite direction decided upon before the process begins.

The first of these alternatives is mind-wandering; the second is thinking. Some minds scarcely do anything but wander; others are capable of thought.

Knowing this, we are in a position to practise thinking, just as definitely as we can undertake muscular development with or without physical apparatus. We may convert our thought-activities from streams of mud and sand into chains of gold.

Let us define some of our words and see where we stand.
(1) The attention is what is commonly called the will, which is ourself awake, expanding and contracting like a heart,

spanning portions of what we may call the mental world, as with two feet. (2) The mental world is a subjective region full of ideas. As the attention poises itself on one of these, whether simple or complex (a larger or smaller portion of that world) it can look around and see some of the mental scenery, the ideas connected with that upon which it rests. (3) Thought is the process of moving from one foot to the other. Ideas are mental objects; thought is mental travel; the will is the traveller. Let us examine these more fully.

There is a sense in which we are all very much aloof from the world. Our life is really in our minds; there we see the reflections of the objects around us; there we feel our pleasures and pains. Sitting in this mind I am at the moment somewhat aloof from my surroundings, and intent only on my writing.

Suppose I stop writing for a moment and look round. In front of me are the table and chairs, on and against the walls are book-shelves, cabinets, a clock, a calendar, pictures, and numerous other things. I look through the windows and there are the tops of the palm and mango trees, the white March clouds of Madras, and beyond them the ethereal blue.

I attend to my ears instead of my eyes—a crow squawks over on the left; the clock ticks on the wall; footsteps shuffle along the corridor; there is a murmur of distant voices; a squirrel chirrup near at hand; some pandits are droning in the Sanskrit library near by; a typewriter rattles somewhere else; and behind all these is the roar of the breakers of the Bay of Bengal on the beach half a mile away. I attend more closely, and hear the blood rumbling in my ears and the long-drawn whistle of some obscure physiological process.

I turn my attention to my skin, and now I feel the pen upon which my fingers gently press, the clothes upon my back, the chair on which I sit (I might say "in which" if it were more comfortable), the floor upon which my feet are

placed ; the warm soft wind pressing upon and wafting my hands and face.

I wish to emphasize this point ; at any moment I am aware of only a tiny fragment of the world. I have travelled about in this body for a number of years, seen, heard and felt many things in different parts of the world, but how little of that experience of mine can exist in my consciousness at any moment, and how inexpressibly small even the whole of it has been in comparison with all that exists which I have not seen or known !

I must accept my natural limitations, but fortunately I am not a mere mirror in which the objects of the world reflect themselves. I have the power of *attention*. I can ignore some things, and pay attention to others. This applies to both sense-objects and ideas.

This being so, let us understand the value of control of the mind, so that what we do we do intentionally. Let us train the mind (1) to move in the direction we have chosen, and (2) to extend and improve its range of vision, its ability to see clearly and rightly the events which it meets on the road of life.

Before we consider (1) let us look again at (2), which is concerned with the static elements, or stepping-stones, in the process of thought.

When the foot of thought comes down upon an idea it does so like that of an elephant, which spreads when it settles, and covers a certain amount of space. Therefore when you turn your attention to an idea you do not find a solitary, clear-cut thing, but one thing associated with many others.

Materially that is the case also ; you cannot find anything by itself—books without eyes to read them, pens without paper to write on, shoes without feet to be covered, cups without mouths to be poured into, houses without people to live in them, are unthinkable things.

But every idea has a centre where the vision is clear, from which it gradually shades away. Just as when I fix my eyes upon the ink-bottle before me I see also vaguely other things on the table, the articles of furniture to left and right, the trees in the garden outside, a multitude of details; so also when I fix my attention on a particular thought I find a mass of thoughts around it, gradually shading off, becoming more indefinite as more remote, and finally losing themselves at no definite limit. So our stepping-stones may be large or small, on account of various factors, especially our familiarity with the subject and our degree of concentration at the moment.

CHAPTER XIV

THE POWER OF A MOOD

WE have already seen that when I thought of a cat I thought of a hearth-rug (which is one of the ideas that can come out of that magic box), but I might apparently equally well have thought of whiskers, milk, claws, or mice. One of such ideas was sure to form the next stepping-stone in my chain of ideas or flow of thought. This chain of thoughts presents an unbroken succession. Each idea is succeeded by another, like the links in a chain. As in time things follow one after another, only two moments with their contents being linked directly together, so in the flow of mental activity images follow one after another, only two being directly connected.

There is some kind of a choice at every step in the process of thought, and it is instructive to observe to what distant goals every parting of the ways may lead, since every idea calls up such a great variety of associations.

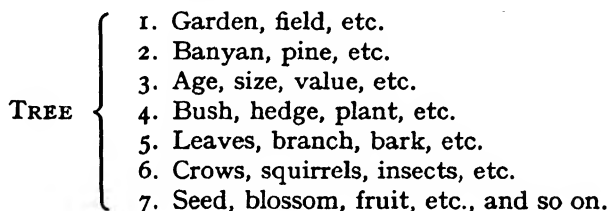
When I used to look at the banyan tree outside my window I saw and heard the throngs of crows and squirrels; and now any thought of a banyan tree will at once bring within its circle a vision of this particular tree, with its spreading branches and hanging roots, the fern-pots beneath it, the audacious crows and the chattering, shrieking, striped brown squirrels. But at once thoughts of other kinds of trees also enter into the circle of attention, though further from the centre; the tall, straight palm, the wrinkled oak, the slender poplar, the sad, shorn willow of central England, the trim pine among the northern snows.

Then again, as I view the spreading branches of the banyan tree and its many trunks, bearing the weight of giant arms ten centuries old, my mind runs back to the history which it might tell—of the floods of the river running near,

of the building of houses and the making of roads, and, far back in the past, of the breezy jungle growth, the jackals and the tigers, the birds and the monkeys and the countless ants and scorpions and snakes which have nestled in its hollows and lived among its branches in the centuries past.

If my mood changes again I might notice its vast extent—a mountain of wood—and think how an army might shelter beneath it, how it would build ten houses or make a thousand roaring fires. Thus the banyan tree calls up different kinds of thoughts *according to my mood*.

The manner in which anyone's thought will turn at the parting of the ways which occurs at every step in thought depends upon his mood. Consider this idea of the tree. It has many thoughts attached to it, such as those mentioned above, or those represented in the following diagram—



If I were a farmer my thought might pass along line 7 to an idea of fruit. Fruit would then become the centre of another circle of ideas, those belonging to lines 1 to 6 having been passed by, almost or entirely unnoticed. The mind might then pass on to the idea of market, a thought which has no direct connexion with the tree, and the tree is now forgotten as the moving attention pursues its course.

If I were a merchant my thought might find itself somewhere on line 3, interested in lumber, which is directly connected with the thought of the tree, and from that it might pass on to the current prices of timber, and on to financial and banking questions and other matters still more remote.

A naturalist might pass along line 6; a huntsman or a

sitting at my desk in the centre of my room when suddenly all the four doors open at once, and with the precision of the cuckoo from an old cottage clock my friends Smith, Brown, Jones and Robinson enter and exclaim with one voice: "Ah, Wood, I want to consult you about something!"

Which will first claim my surprised attention? This will certainly depend upon something. It will depend upon the mood of my mind. The only other thing which could determine it would be some unusual peculiarity in attire or gesture, which we are not supposing to be present. If Brown were dressed as a Turk he would claim first attention; but in the absence of any such startling or abnormal thing, nothing but the mood of the mind at the moment could determine which selection the attention would make.

Again, suppose that I am engaged in the work of putting a book through the press, and someone comes to the door and calls out: "Proofs!" I have visions of printed sheets and the drudgery of correcting them. If I am engaged in studying a scientific problem, the same sound will immediately awaken a totally different set of ideas. Here it is clear that the difference which determines the sequence lies in the mind, not in the outside world.

Similarly, if Mr. Lincoln Inn, the eminent barrister, is in London, and someone utters in his hearing the word "bag," he at once thinks of briefs and all the paraphernalia of his profession; but if it is the vacation and he is engaged in his favourite sport of shooting upon the Scottish moors, the word at once brings before him gratifying visions of forlorn-looking birds tied by the legs, and pleasant recollections of his skill and prowess and past triumphs on the field of sport. - At different times different moods—purposes, habits, and interests—dominate our minds, and it is the *mood* which is the cause that one idea rather than another should be selected from the many that surround every thought and object. As a powerful magnet polarizes soft iron within a

considerable area, not only in immediate proximity, so does the temporary or permanent mood polarize each incoming idea as soon as it approaches the outermost sphere of the field of attention.

Most of us are familiar with the schoolboy experiment with a test-tube loosely filled with iron filings. We corked it and laid it flat upon the table, and as we passed a magnet slowly over it we watched the filings rise and turn over and lay themselves all in the same direction, so that they became a lot of little magnets all acting together. And we then found by experiment that the tube of filings had become a magnet.

At first the filings lay higgledy-piggledy; even if they had then been magnets the influence of one would have neutralized that of its neighbour, because of their different directions; but now that they lie in line they act together as a magnet, influencing all soft iron that is brought near to them.

So also if your thoughts lie higgledy-piggledy in the mind, pointing in all directions, their effects will destroy one another. If you want to know the present condition of your mind, observe the nature of your thoughts when you are not deliberately thinking of something definite—they form the background of the mind, and it is possible that they may be a confused and sorry crowd. If we desire success in any particular pursuit, we had better polarize those thoughts.

We can now understand that success in the pursuit of any aim may be promoted by our establishing a permanent mood in its direction. When this is done, even the most trifling or the most adverse events will fall into line and prove of service to us in the gaining of our end. The will controls thought. It can form a mood covering a period of time or a specific enterprise.

If you would like to undertake a little experiment in keeping a mood through a series of ideas try the following—

Open a book at random, and note the first noun that catches your eye; this idea will be your starting-point. Next

open it at a different page, and again take the first noun; this will be your goal. You are interested in reaching that goal. It determines your mood for the time being. Then think consecutively from the starting-point to the goal.

For example, I have turned up "law," then "portal"; I must think away from "law," keeping "portal" in view until I reach it. This proves to be an easy matter, for I think of a certain law court that I know, which has a strikingly gloomy entrance.

A second case: "cloak" and "bottle." Again it is easy because my wife has a bottle-green rain-coat.

A third case: "turmoil" and "wall"; I might think of many things in connexion with turmoil, but under the present conditions I find myself thinking of a medieval battle against the wall of an old fort near which is a college where I served as Principal for some years.

These exercises will help you to realize how a mood imposed by the will actually works, and will assist you to impose one permanently or temporarily on the mind at any time, so that your life may be concentrated on a definite purpose. In addition to its general purpose in life, you will find this power to impose moods very useful as enabling you to turn rapidly and effectively from one piece of work to another.

CHAPTER XV

EXPANSION OF IDEAS

IN Chapter III we have studied how to develop concentration by thinking of many things connected with a chosen object, taking care at the same time not to lose sight of it. For that purpose we made use of the four Roads of Thought.

Now I propose to the student a very similar experiment for the purpose of expanding ideas, so that he may be able to do his best thinking about any object.

Select your object, let us say "house," and proceed to clothe it with all its directly connected ideas. The result may be somewhat as follows, but should be much fuller, as there is not room here for a complete picture.

HOUSE

Road I. A. Abode, dwelling, domicile, residence, habitation, address, lodging.

B. Cottage, mansion, cabin, shed, hut, hovel, tent, shanty, barrack, palace, castle, kennel, sty, pen, nest, hive, wigwam, hutch, villa, lodge, hotel, inn, bungalow.

C. Prison.

Road II. A. Room, hearth, floor, wall, door, roof, foundation, brick, mortar, tile.

Village, town, farm, camp, park, block, row, square, street, road, terrace.

B. Warehouse, shop, factory, field, orchard, garden, barn.

Road III. A. Large, small, comfortable, ugly, beautiful, new, old, Elizabethan, Georgian, Colonial, modern, stone, brick, wood, concrete, country, town.

B. Museum, school, factory, workshop, store, church, temple.

Road IV. A. Furniture, crockery, fire, water, electricity, gas, bath, architect, builder. Also houses you have known or particularly noticed.

B. Comfort, safety, health, companionship, cleaning.

As another example I will take an abstract subject—

PEACE

Road I. A. Virtue.

B. Harmony, concord, friendship, calm, agreement, sympathy.

C. War, enmity.

Road II. A. Good citizenship, worthiness, holiness.

B. Industry, devotion, perseverance, altruism.

Road III. A. Fraternity, friendliness, tranquillity.

B. Sympathy, game, agreement, arbitration, good-humour, co-operation.

Road IV. A. Pipe, treaty, League of Nations, plough-share, pastoral scene, pacifism.

B. Safety, commerce, progress, armistice, truce.

It will be noticed that some of the above lines of thought have two subdivisions. In IV *B*, for example, we have to consider what peace leads to, and what leads to peace.

In actual experiment along these lines the student will find that he has to do much thinking. He will ponder a moment to consider how peace is a virtue. He will consider whether a factory is part of the same whole along with a house, or is another object having the same quality as a house; he will probably finally agree with me that it is both—for they are often co-parts of a town or village, and they also have an outstanding quality in common, the character of being shelters from the sun, wind or rain. Some may consider that I am wrong in putting prison in contrast to house, and that I should have put “the out-of-doors,” and that I am wrong in including such

things as hive, nest and kennel in objects belonging to the same class. Perhaps I am wrong in those cases, but the student must agree that this exercise gives a good training in the art of thinking. To do it you are compelled to think.

SECTION IV

A BAG OF TRICKS

CHAPTER XVI

NUMBER ARGUMENTS AND DIAGRAMS

NEARLY all persons find it difficult to remember numbers, because these do not in themselves represent objects evident to the senses and therefore material for imagination. We can easily imagine two gate posts, three sides of a triangle, six surfaces of a cube, but when we go beyond this it becomes increasingly difficult to imagine the quantities of even quite definite things. It is still more difficult to picture the numbers representing quantities of units of measure.

A teacher may "feel" that there are thirty-five or forty boys in his class by seeing them in complete or broken groups, but of things such as the number of feet in a mile, or the square root of a number, only a specially constituted mind could form the slightest image. Numbers in themselves are meaningless in the imagination.

Notwithstanding this abstract character of numbers, they have some distinguishable features in their relationships to one another. It is therefore possible to develop a greatly improved memory of numbers by studying these features, so as to acquire familiarity with their distinctions.

To a very little child a cat and a dog are not at first clearly different kinds of things, but later it observes their points of difference and recognizes them easily—no longer as indistinguishable twins. When non-Asiatic persons first go to Japan or India, they often say that the Japanese or the Hindu people are all alike. Frequently they find themselves in the embarrassing position of not being able to distinguish those to whom they have been introduced a day or two before. But later on they have no such difficulty. At first the general colour and formation of face dominated the mind, and only after it had become quite used to these features did it begin

to discriminate the minor differences. In time, indeed, the new resident forgets the brown colour and does not notice it at all.

Similarly do we appreciate the facial merits of our loved relatives, who may be homely or even repulsive to others. To add another example; it has often been remarked that a shepherd recognizes by their features the members of his flock, which look alike to ordinary persons.

Most people have not developed a sense of the relations between numbers, and have not practised thinking about them—hence their inability to recognize and remember them. When this faculty of the mind has been developed by practice of number arguments, the numbers will become familiar realities with strong features of their own, and will be remembered with comparative ease.

Let us suppose that you want to remember your new telephone number, which is 8715. Write the number down, look at it, and do all the reasoning that you can about it, on the following lines: the first number is even and it is the biggest; the other three are odd, and of those three the biggest comes first and is one less than the even number; the middle odd number is the smallest possible; if you add the last two you have a descending series from 8; the addition of the two middle numbers equals the first—and so on.

It is a great help in the remembering of long numbers to divide them into groups, in much the same way as long words are divided into syllables. The present number conveniently breaks into 8 and 715.

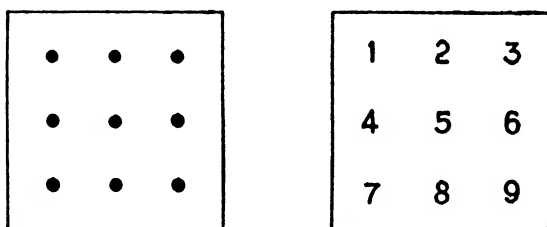
Looking over the balcony where I am writing this paragraph I see a motor car standing in the road—number 208457. This easily splits into two parts, 2084 and 57. The first part has only even numbers, if we may consider 0 in the even series; the last part has two odd numbers, which are ascending and successive, and follow in order (5 after 4) from the first part. The first part begins with the smallest

positive even number, ascends after 0 to the highest and then goes on to half that or double the first—and so on.

The following happens to be the number on a certain passport: 062246. It presents the peculiarity of being composed only of even numbers. It splits comfortably into three, 06, 22 and 46. The middle pair is easily remembered, and the other two may be compared. Both end in 6; the first number of the last pair is the sum of the middle pair, and the second number follows it successively; the sum of the last pair is equal to the sum of all the rest—and so on.

There is no group of numbers that cannot be discussed in this way. After considering for half a minute any telephone or other number you will find it pleasantly reclining in your mind whenever you want to remember it. The arguments will disappear, but the number will remain, and you will probably soon find also that your observation and memory for numbers have been greatly improved, so that you can remember them far better than before, even without special intention and without resort to these number arguments.

Let us now turn to a method of remembering numbers which I have called "Number Diagrams."

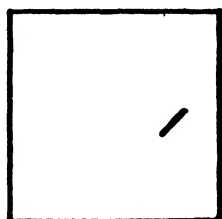


Look for a little while at the first diagram above, which is nothing more than a square containing nine dots in the centres of the nine equal divisions into which it is easily broken up in the imagination.

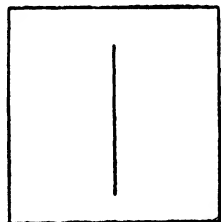
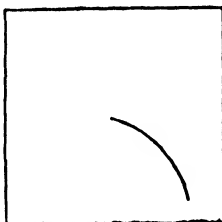
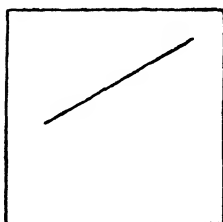
Then look at the second diagram, and imagine that the divisions of the square have the values of 1 to 9, as shown.

In the first diagram the middle dot can be supposed to

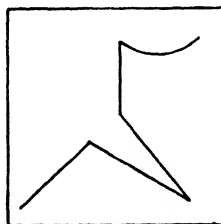
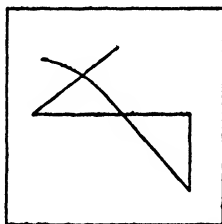
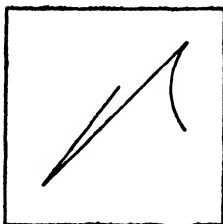
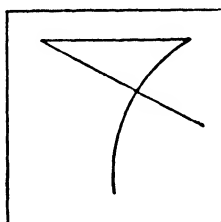
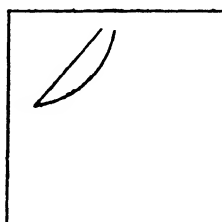
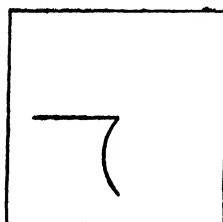
stand for the number 5, the dot in the lower left-hand corner for the number 7, that in the upper right-hand corner for 3, and so on. Thus, an imaginary square containing a dot or a little dash, as below, will constitute a diagram for the number 6.



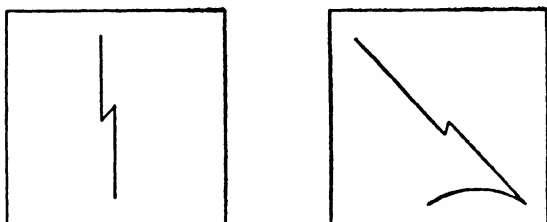
Two Digits. To form a diagram for a number having two digits, simply draw a line from the one position to the other, straight if the *smaller* comes first, curved if the *bigger* comes first, as in the following, representing 34, 95 and 28.



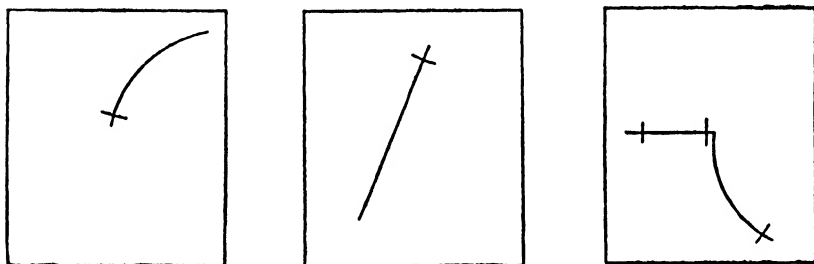
Three Digits. If the number contains three or more digits, *always* begin with a straight line and end with a curved one; thus we may express 458, 242, 6138, 5736, 24691 and 759523 by:



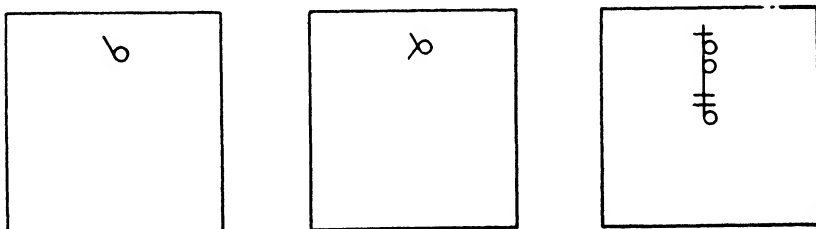
If the three numbers happen to lie in a straight line, a break in the line should be made, as will be seen in the following diagrams of 258 and 1598:



A little complication is introduced if two similar digits happen to come together, but the difficulty is overcome by the device of making a little tick across the line to indicate the second similar digit; thus, for 553, 227 and 445599 we form—

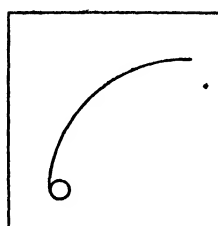
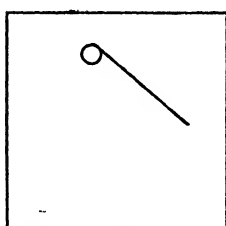
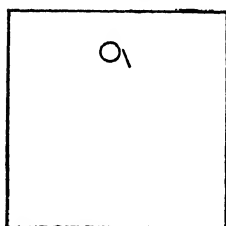


A further complication arises in connexion with the cipher. In this case insert a little circle into the series; thus, for 20, 202 and 22005550 we have—

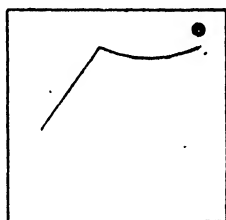
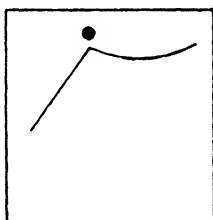
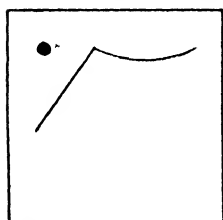


If the cipher comes first in the number, detach it at the beginning if there are only two digits, but attach

it if there are more, as in the following, representing 02, 026 and 073.



A decimal point may be indicated by a dot placed in that one of the nine divisions of the square which corresponds to the position of the number before which it is to be placed. Thus if the point is to be placed before the first digit, it will be put in the first division, and so on, as in the following examples, showing 423, 423 and 423.



It is a help to make the number diagrams of a generous size in the imagination—as big as an average picture or even a window frame.

The two practices in this chapter lend themselves to immediate employment in practical affairs, so no special exercises need be prescribed.

CHAPTER XVII

NUMBER-WORDS

IN the year 1648 Stanislaus Mink von Wenusheim wrote a work entitled *Relatio Novissima ex Parnasso de Arte Meminiscentiae*,¹ in the course of which he expounded what he described as "the most fertile secret." This "secret" consisted in substituting letters for numbers and then making words and sentences from the letters.

He appears to have been the first mnemotechnist to employ this plan in Europe, and his method was quickly taken up and improved by the famous G. W. Leibnitz, who also called it a secret—"A secret how numbers, especially those of chronology, etc., can be conveyed to the memory so as never to be forgotten."²

Dr. Richard Grey was the first to expound the idea in English, in his *Memoria Technica*, published in 1730. It cannot be said that Dr. Grey's number letters were very satisfactory, for it was possible to make from them only uncouth words, whereas for the benefit of mind and memory we require words naming familiar objects or ideas.

In Dr. Grey's system 1 could be represented by either a or b, 2 by either d or e, 3 by either i or t—I need not mention the rest of the equivalents. To remember (to take only one example) that the Inquisition was first erected against the Albigenses in the year 1222, he formed the compound word, "Inquisided"—the first part to represent the Inquisition, and the "ded" to represent the number 222, the thousand being ignored as not being likely to be forgotten.

Gregor von Feinaigle (1812) improved upon that clumsy system by giving number-values only to consonants, and

¹ "Parnassus" was the name of a periodical, published at Marburg.

² From a MS. in the Library of Hanover.

keeping the vowels free, so that they might be inserted between the consonants to form well-known words. His alphabet was: 1 = t; 2 = n; 3 = m; 4 = r; 5 = l; 6 = d; 7 = c, k, g, q; 8 = b, h, v, w; 9 = p, f; 0 = s, x, z. From these equivalents the number 812 (I take it from the date of publication of his work, as a random example) could be represented by words such as "button," "obtain," or "Wotan."

Other teachers of memory systems—notably Aimé Paris, Francis Fauvel Gouraud, Dr. Edward Pick, and others more recent, worked further upon this idea of number equivalents, introducing small improvements—mostly attempts to provide for each number a more or less equal representation. The lower case of a practical printer shows that certain letters are used in the English language much more frequently than others. Those which are comparatively little used should therefore be grouped in lots, each lot to represent one number.

I have studied most of these systems, and as a result have formed my own, which I believe to be a slight improvement upon even the best of any of the others. It happened that nearly twenty-five years ago I had a long illness, and during convalescence I had to lie down quietly for about six weeks. I took the opportunity during that time to study the combinations of the letters in all the commonly used words in the English dictionary.

Before I explain the method, in which I naturally adopted all that was best in the old systems, I must mention that the "fertile secret" was known among the Hindus long ago. I have before me a set of number-equivalents for the Sanskrit language given in Nilakantha's Commentary on the "Mahabharata" (Adi Parva, end of Sarga 2). His system was called "Katapayadi." His number-equivalents were for consonants only as shown in the table on page 113.

I insert this only as a curiosity for European readers, and

१	२	३	४	५	६	७	८	९	०
k	kh	g	gh	ng	ch	chh	j	jh	ñ
ṭ	ṭh	ḍ	ḍh	ṇ	t	th	d	dh	n
p	ph	b	bh	m					
y	r	l	v	s'	sh	s	h	!	ksh

so refrain from explaining the phonetics of the Sanskrit alphabet.

One of the uses of this system is found in a commentary on the "Ramayana," in which the number of verses is given in mnemonic form at the ends of certain sections. We find apparently unmeaning words ending in "mana" (a measure), such as garamana, which would indicate the number 32. The system is also referred to in other places, such as Vararuchi's "Kadinava" and the "Laghu Arya Siddhanta."

Now to the system which I advocate. It springs from a study based upon a recognition that the numbers १, २, ३, ४, ५, ६, ७, ८, ९, ०, are probably used equally in human affairs, but the letters of the alphabet are not, and further, some letters are rare at the beginnings or the ends of words, while others are common.

१ is to be represented by t, or d. Thus the following words may stand for number १: head, tea, toe, doe, hot, oat, wad, yacht, youth, thaw, etc.

२ is to be represented by n. Words for number २: hen, knee, wain, neigh, etc.,

३ is to be represented by m. Words for number ३: yam, may, home, ma, aim, etc.

४ is to be represented by r. Words for number ४: oar, row, ray, arrow, etc.

५ is to be represented by l. Words for number ५: hill, hall, lea, yellow, etc.

6 is to be represented by ch, j or sh. Words for number 6: joy, wish, ash, edge, show, chew, etc.

7 is to be represented by k, g, or ng. Words for number 7: cow, hag, egg, hang, ache, etc.

8 is to be represented by f or v. Words for number 8: foe, vow, half, wave, fee, etc.

9 is to be represented by p or b. Words for number 9: ape, bee, hope, web, abbé, hub, etc.

o is to be represented by s or z. Words for number 10: hose, saw, haze, zoo, ass, etc.

The letters h, w and y, and the vowels, have no number-values in our method, but may be used for word-making wherever convenient. Only the *sound* of words (not the spelling) is considered, and double letters are always used as though single, as in "yellow."

It is very easy with these number-letters to find a great variety of words representing numbers from 1 to 100: in many cases, such as 10, 14, 15, 41, 50, 51, 57, 70, 85, 90, 91, 94, 95, 97, one can readily write down about forty words for each number.

When we come to numbers between 100 and 1000, it is a little more difficult, and the student will find that, while he can readily write down several words for most of the numbers there will be over two hundred out of the nine hundred numbers which will give him pause.

If we choose the number 742 for example, we may readily form corn, crane, green, carrion, grain, acorn, cairn, etc. For 945 we easily discover April, pearl, prowl, broil, parole, peril, parley, barley, barrel, apparel, beryl, brawl, etc. For 114 we readily find daughter, editor, theatre, debtor, auditor, tutor, tooter, dater, etc.

But the following numbers, among others, present difficulties: 993, 963, 896, 699, 598, 599, 568, 525, 499, 418, 353, 135.

To overcome these difficulties I suggest the following

plan : use an adjective and a noun together, and count only the first consonant sound of the adjective. We can then form, for the above numbers, epic poem, prowling puma (993); pure jam, precious gem (963); flowery bush, full page (896); shy baby, cherry-wood pipe (699); lean beef, light puff (598); lively puppy, lead pipe (599); Highland chief, yellow sheaf (568); long nail, lower Nile (525); restless baby, ruling pope (499); running thief, rapid dive (418); meek lamb, mortared lime (353); daily mail, hot meal (135).

It is necessary in all such cases to make a very lively image to represent the adjective. Vague and general adjectives, such as nice, good, bad, pleasant, etc., are to be strictly avoided.

Students do not nowadays need to remember long lists of dates in history and of numbers in science and mathematics, as was formerly the case, so numbers of more than three digits are rarely needed. In history, one needs only three digits for dates, as the thousands may easily be remembered without any special attention being given to them.

When we have settled that we do not want more than three digits in one word, we may, if we wish, employ the method of counting only the first three consonant sounds in a long word, or if we use an adjective, the first sound in the adjective and the first two in the noun.

We may then form number-words such as the following : flowing river (848); boomerang (934); book-case (977); wild elephant (558); blue lotus (951); young pigeon (796).

The number-words, when formed, can be associated without difficulty in all the ways that I have already indicated, and from them the numbers can readily be drawn.

The following will serve as a little exercise for the student. Convert these numbers into a sentence by first finding as

many words as you can for each: 2, 3175, 174—1, 1953, 2, 651, 51—0, 6415, 1, 9, 214101, 9, 1, 45, 756, 8, 80620, 21, 1, 45, 756, 8, 04620. 10, 01956321, 010, 2, 012141, 14, 17140, 67, 1, 09650, 2, 1, 74, 8, 65142.

The key to the above sentence is: "A new medical degree—the Diploma in Child Health—is shortly to be introduced by the Royal College of Physicians and the Royal College of Surgeons. Its establishment sets a new standard for doctors wishing to specialize in the care of children."

In the last chapter I gave a telephone number, 8715, a motor-car number, 208457, and a passport number, 062246. If we wish to remember these by the number-word method we could form "full kettle," "unsafe rowlock," and "such inane rush" respectively. In this case we must remember that we are using the adjectives in full in reference to the two larger numbers.

Now let us suppose that the telephone, the motor car and the passport belong respectively to a Mr. Smith, a Mr. Brown and a Mr. Robinson; we can connect the numbers with those persons by: full kettle—repair to kettle—tin-smith—Smith; unsafe rowlock—boat—drown—Brown; such inane rush—danger—robbery—Robinson.

If they are your own telephone, motor car and passport you may remember them by: full kettle—bubbling sound—ringing sound—telephone; unsafe rowlock—boat—conveyance—motor car; such inane rush—travel—passport. The student may perhaps improve upon these associations; I have given the first that came into my head.

A man with a good memory for numbers, and thoroughly familiar with their manipulation, might be able, with some effort, to remember a dozen or twenty digits once read out to him; but it would be indeed difficult to find a man who could remember, say, a thousand numbers in that way, though the task of doing so by our method of substitution is simplicity itself.

There are several ways of arranging the digits in a very long number. The method I recommend is that of taking them in groups of three and then finding number-words for them.

I will take at random—921840365719283605712823701562394. For this I may form the following series of words: bind, freeze, marine shell, cool dip, new vim, chisel, cotton, venom, ghost, legion, empire. These words are almost the first that occur to me, and are by no means necessarily the best. I use them to show what can be done off-hand, though it is better generally to go over the numbers and choose the words more carefully when there is time.

The next step is to link the words by intermediaries, where necessary, as, bind (fix) freeze (water) marine shell (sea) cool dip (nudity) new vim (keen, tool) chisel (shavings, soft, cotton-wool) cotton (cotton-thread, stringy, snake) venom (fear) ghost (dead, dead warriors) legion (Roman legion) empire.

Another method of making number-words was “discovered” by M. Gouraud, and expounded in his *Phreno-Mnemotechny*, published in New York and London in 1845. He called it “number metamorphosis.”

His metamorphoses were made through similarity of sound. The name of some object of sense was substituted for the name of the number, thus: for the figure zero, hero; for the number one, a wand; for the number two, a tooth; for three, a tree; for four, a fort; and so on.

These metamorphosed words or “homophones” were used as “pegs” on which to hang nine or ten numbers each, while the ten numbers were formed into a sentence on the principle of number-words.

M. Gouraud showed how to apply this method to keeping in mind the ratio of the circumference to the diameter of a circle to the extent of 154 decimals, a feat which he performed by learning sixteen simple sentences.

The first nine numbers are 3 1 4 1 5 9 2 6 5, for which he formed the ridiculous sentence: "My deary dolly, be no chilly." This, the first set, is the "hero" set, and was linked with that word by the supposition that a hero was uttering the sentence.

The sentences are difficult to make, and the linking is decidedly primitive, but apart from these elements, the scheme of metamorphosed key-numbers proves very useful.

It may, for example, be used as providing starting-points for a series of our number-words, which may very readily be linked on to it. We may choose thirty numbers, as before, 9218403657, 1928360571, 2823701562, and remember them in three sets of ten, each preceded by one of the key-words. The digits from the first to the tenth will be under the aegis of "hero," the eleventh to the twentieth under "wand," and so on. Thus for the foregoing numbers we may make three sets: *hero*, bone, devour, smash, leg; *wand*, tap, knife, images, locket; *tooth*, hen, fan, hammock, stall, chain. These could be connected, where it is necessary, by (mighty dead), (hungry dog), (crunch), (broken leg); (blow), (cut), (gleaming and mirror), (portrait); (beak), (feather), (swing), (rest), (rope).

This method facilitates the location of the digits, and enables one to pick out a number required, without the trouble of counting along the whole series.

A third plan, which I prefer to M. Gouraud's, is to select number-words for key-words, instead of homophones; for example, instead of hero, use ice, sea, saw, ass, sow, sue, ease, essay, hose, house, or any other zero word; instead of wand use tea, tie, add, oat, toe, height, youth, or any other word standing for the number one. In this case it is easy to find a word suited to the series which it is required to begin.

It will now be seen that the task of remembering dates is a very easy one. All that needs to be done is to take the last three digits of the date, form a word from them, and connect

this in turn with the idea of the event by our link method.

There are, of course, other devices useful to students, such as that of making charts of centuries, divided into squares for each year or ten years, and fixing small symbols in each square to represent the happenings of the period.

I will content myself with one or two examples of the link method: Queen Boadicea raised an army against the Romans and killed 7000 of them, in the year A.D. 67—check. King Arthur, famous for his powerful resistance and victories over the Saxons, A.D. 514—leader. Queen Elizabeth ascended the English throne, 1558—fond of praise—lady-love. Germany annexed Austria, 1938, bold move. Transatlantic air mail began, 1939, air—air-pump—pump.

CHAPTER XVIII

PLACING THE MEMORY

IN a previous chapter I have mentioned that the Greek poet Simonides had the idea of symbolizing complex or abstract ideas so as to remember them easily. The examples I took were from a hypothetical discourse in which government, financial matters and naval affairs and the necessity for wisdom in the policy of the time, would be represented respectively by a crown or sceptre, a current coin, the image of a ship, and the figure of Minerva.

We are also indebted to him for the idea of using places or positions in which to put ideas for safe-keeping in the mind, much as we put papers in pigeon-holes or files.

Suppose that we provide our places in a house which is quite familiar to us. Then, if we enter our house at the front door and number all the objects we see in turn—the doormat 1, the brass step 2, a picture 3, a hatrack 4, an umbrella stand 5, and so on—we have at once a basis for remembering a large number of things in order.

In the discourse above mentioned we might place the crown on the doormat, the coin on the brass step, the ship in the picture, a statue of Minerva on the hatrack, and so on. Thus the speaker could avoid missing any of them in the course of his speech or debate.

The incident which led Simonides to this mnemonic device of places is related as follows by Cicero. I have taken it from Dr. Pick's *History of Mnemonics* (1866).

"A man named Skopas, at Kranon, in Thessalia, once gave a grand dinner in honour of a victorious gladiator. Among the guests was the poet Simonides, who, during the repast, recited some verses he had composed in honour of the hero of the feast. After his recitation, he was called outside, and

had scarcely left the room, when the ceiling fell in, crushing Skopas and all his guests. When the relatives of the killed came to bury the remains, they found them so smashed and disfigured, that they could not distinguish one body from another. It happened, however, that Simonides had observed the place which each person had occupied; and on looking at the several places, he was able to identify all the bodies. This led him to believe that nothing could better assist the memory than to retain in the mind certain fixed places, and therein to deposit, with the assistance of the imagination, whatever we intend to keep in our memory."

The following extract from Quintilian shows how the idea was used among the ancients—

"You choose a very spacious and diversely arranged place—a large house, for instance, divided into several apartments. You impress on the mind with care whatever is remarkable in it; so that the mind may run through all the parts without hesitation or delay; for the essential is not to hesitate before the objects, as remembrances destined to help other remembrances should be more than sure. Moreover, for recalling to mind what you have written or simply meditated, you help yourself with any sign borrowed from the matter you have to treat of—if the object should be one of war, navigation, or the like; or with some word, for a word suffices to refresh the memory, as soon as it befalls to fail. If the object is navigation, the sign will be an anchor; if it is war, it will be a weapon.

"Then you proceed as follows: you place the first idea in the hall, the second in the parlour, and so on with the rest, going over the windows, the chambers, to the statues and similar objects. This done, if the object is to apply that proceeding to the memory, you look over every apartment, beginning with the first, and recalling at every picture the idea which was confided to it; so that, howsoever numerous the things may be which are to be kept in mind, they are

put in a row, and form a sort of chain, which prevents the confusion to which you are exposed when bound to learn by heart. You can create for yourself imaginary places."

In another place Quintilian said that in place of a house, which might not contain enough things to act as pegs or places (quite possible in his day, I suppose, though hardly likely now), we may assume a public building, the walls of a city, or a well-known road, to divisions of which we may refer our symbols.

Metrodorus assumed the circle of the zodiac, divided into 360 compartments of a degree each—but that in my opinion would not provide a background of sufficiently vivid quality. The common things of daily life, or the incidents of mythology or history are far more vivid and facile for any but an extraordinary mind.

The process of locating ideas (by means of symbols and otherwise) in familiar objects underwent numerous changes in the course of the centuries that followed. I need not detail these but will content myself with a brief description of the adaptation made by Gregor von Feinaigle.

In this later development an imaginary house is taken as having a number of rooms, and each room as having fifty places, arranged in the following manner: the floor is divided into nine equal squares, and each wall is divided similarly into nine, with, however, a tenth in the centre above it upon the ceiling, while another square in the centre of the ceiling makes the fiftieth square in the room.

You enter at one side, and find before you nine squares on the floor; then, on your left hand is a wall with the tenth square on the ceiling above, and squares 11 to 19 on the wall; in front of you a similar set from 20 to 29; on the right another, from 30 to 39; beside you another, from 40 to 49; while number 50 lies above you in the middle of the ceiling.

Having fixed your walls, it is better to take a walk round

the room in imagination, rather than merely to stand at the side and survey it in the manner described.

It now remains to people the apartment, and this may be done in a variety of ways.

Von Feinaigle used the method of similarity of form, that is, he made pictures somewhat resembling the numbers assigned to the squares or places. On the floor of the first room he had—

The Tower of Babel	A Swan	A Mountain, or Parnassus
A Looking- Glass	A Throne	The Horn of Plenty
A Glass- blower	Midas	A Flower, or Narcissus

In the case of number 4, the form was really symbolical, the looking-glass having four corners, but the other pictures were so drawn that they very closely resembled the numbers.

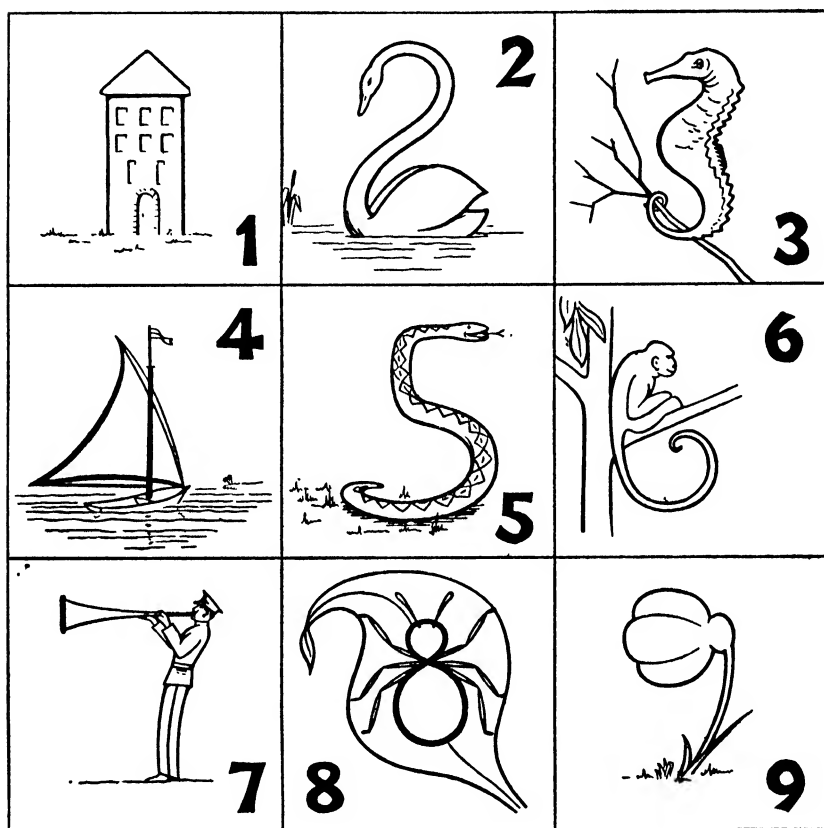
I will supply a set of the first nine squares which I think give an improvement upon von Feinaigle's selection—for 1 a tower, 2 a swan, 3 a sea-horse, 4 a sailing boat, 5 a snake, 6 a monkey, 7 a trumpeter, 8 an ant, and 9 a flower. The pictures on page 124 illustrate the idea.

It would be equally practical, at least for the smaller numbers, to use the homophones, or similar-sound words, of Gouraud, which I have mentioned in my previous chapter. Then the first square would be occupied by a wand, the second by a tooth, the third by a tree, the fourth by a fort, and so on.

A better method, in my opinion, is to form pictures according to number-words representing the numbers. In that case we might have in the first square a head, in the second a hen, in the third a home, in the fourth an oar, in the fifth a hill, and so on. The advantage of this method is

that it gives us a very wide choice of familiar objects from which to make at least two rooms—that is up to a hundred.

If the student wants at short notice a set of, say, ten



squares or places, I suggest that he may select number-words relating to some chosen category of things, such as:

Towns; 1 Tokio, 2 New York, 3 Manchester, 4 Rio de Janeiro, 5 London, etc. For number 10 a town beginning with s or z—Stuttgart. Here I use the first consonant only.

Animals; 1 dog, 2 hen, 3 monkey, 4 rabbit, 5 lion, etc.

Materials; 1 wood, 2 enamel, 3 marble, 4 iron, 5 leather, etc.

Races; 1 Tibetan, 2 Indian, 3 American, 4 Russian, 5 Liberian, etc.

Locomotion; 1 tram-car, 2 underground railway, 3 motor car, 4 aeroplane, 5 lorry, etc.

Shops; 1 Thacker's, 2 Wanamaker's, 3 Marshall Field's, 4 Orr's, 5 Liberty's, etc. (I have given the names of shops well known to me; the student will easily provide substitutes of his own.)

Clothing; 1 turban, 2 necktie, 3 umbrella, 4 riding suit, 5 lace, etc.

Foods; 1 toffee, 2 nuts, 3 milk, 4 rice, 5 olive oil, etc.

People; 1 Hitler, 2 Napoleon, 3 Emerson, 4 Rembrandt, 5 Lenin, etc. (I have given historical names, but personally-known people are even better, as having more mnemonic detail.)

I now ask the student to notice that I have given, in "Towns," "Animals," "Materials," etc., number-words for 1, 2, 3, etc. He is thereby provided with 90 squares, which will serve him well for a long series, since he can use Towns for places 11 to 20, Animals for places 21 to 30, and so on. To complete a full "house" of a hundred squares he can make an extra series of 1 to 10, composed of, say, Sounds: 1 thunder, 2 neighing, 3 music, 4 rattle, 5 laughter, etc.

I consider this last method of mine about the best of all—easiest to commit to memory, and allowing for a selection of very familiar objects. Let the student make up his own ten sets of varied familiar objects on these lines, and he will be well equipped to perform what most people will regard as wonderful feats of memory.

Whatever he decides upon he will do well to make a set of little drawings for himself; however rough or crude they may be they will aid his imagination greatly.

It is necessary to commit the chosen set of places thoroughly to memory, but the task is an easy one, because the objects either resemble the numbers they represent or are number-words.

Another plan for making a set of 25 squares on the spur

of the moment is to follow the letters of the alphabet (omitting x) with reference to some category such as animals, or countries or occupations. Thus we might form the series: Architect, Butler, Carpenter, Doctor, Elephant-trainer, Farmer, Goldsmith, Harbour-master, Ink-maker, Journalist, Kitchen-maid . . . Veterinary surgeon, Watchman, Yachtsman, Zoologist.

The advantage of the picture-system over that of merely linking together a long string of things is that you can at once pick out any one of the things you want from it without disarranging the series, and without having to repeat the whole series from the beginning. Its disadvantage is that more ideas are imposed upon the mind than are quite necessary for understanding the things to be remembered. Yet that disadvantage is small, and the system does enable one to do some things that would be impossible by the link method. With its aid some astonishing memory feats can be performed.

Some such system as this was almost universally employed by those who from time to time appeared in Middle Age Europe performing memory feats consisting of repeating vast numbers of words and numbers once read out to them. One of the most striking examples of this use of the art was a certain Lambert Schenckel, who travelled over the chief countries in Europe in the sixteenth century, and won honour and praise everywhere, though in his earlier years he, like many others, was persecuted for supposed traffic with the devil. A pupil of his, Sommer, writes in a Latin treatise—

“A lawyer, who has a hundred or more causes to conduct, by the assistance of my mnemonics may stamp them so strongly on his memory that he will know in what manner to answer each client, in any order and at any hour, with as much precision as if he had but just perused his brief. And in pleading, he will not only have the evidence and reasonings of his own party at his finger’s ends, but all the grounds

and refutations of his antagonist also. Let a man go into a library, and read one book after another, yet he shall be able to write down all that he has read, many days after, at home."

The student will understand, from my previous chapters, how to associate the objects to be remembered with the places to which they are assigned. Suppose that in the 17th place we want to remember an ostrich. Let my 17th place be a town beginning with k, g, or ng, say Kiel. I do not like the old idea of making a picture of an ostrich crossing the Kiel canal. If I make a rational association and concentrate on it for a moment, I can drop it out of mind with full confidence that it will come to light again as soon as I think of Kiel. Such a connexion might be: ostrich—sand—water—canal—Kiel.

CHAPTER XIX

MEMORY-MEN OF INDIA

INDIA has always been a land of wonders, among which the memory feats of the *Ashtavadhanis* have long been conspicuous. An article in *The Theosophist* magazine for 1886 reports an occasion on which a memory expert of South India simultaneously kept in mind and did the following eleven things and afterwards correctly repeated the whole.

1. Played a game of chess, without seeing the board.
2. Carried on a conversation upon various subjects.
3. Completed a Sanskrit verse from the first line given him.
4. Multiplied five figures by a multiplier of four figures.
5. Added a sum of three columns, each of eight rows of figures.
6. Committed to memory a Sanskrit verse of sixteen words—the words being given to him out of their order, and at the option of the tester.
7. Completed a “magic square” in which the separate sums in the several squares added up to a total named, whether tried horizontally or vertically.
8. Without seeing the chess-board, directed the movement of a knight so that it should make the circuit of the board within the outline of a horse traced on it, and enter no other squares than those.
9. Completed a second “magic square” with a different number from that in the above named.
10. Kept count of the strokes of a bell rung by a gentleman present.
11. Committed to memory two sentences of Spanish, given on the same system as No. 6.

The writer of the article, Colonel H. S. Olcott, went on

to say that he had heard of men who could take in fifty things in this way, and in one case, when he was living in Bombay, there was an exhibition in the house of a Hindu gentleman of high position in which the pandit remembered no less than one hundred things given to him at the one sitting. The Colonel believed, however, that twenty-four was about the maximum of new items that could be retained and the remainder must have been already known to the pandit.

This estimate was certainly too low, but the author was correct when he added, with reference to the method of memorizing, that the memory-men have acquired the power of creating in the mind for each of the several things they do a separate mnemonic point or thought-centre, around which they force the ideas relating to it to cluster and group themselves.

The "places" which I have described in the preceding chapter constitute such mnemonic points.

In an exhibition which I had the pleasure of witnessing in the State of Morvi in Kathiawar, the expert, Mr. Nathuram P. Shukla, remembered a hundred items. There was a large gathering of people, seated on carpets in a big hall. Twenty people were selected and seated directly in front of the pandit. He attended to each of the twenty people in turn, and went along the line five times.

Several gave him sentences composed of five words, each person using a different language—Gujarati, English, Sanskrit, Persian, Hindi, Mahratti, French and Latin—and the words were given out of order. One sitter gave moves in a game of chess. Two others gave figures to be multiplied and added together. Another carried on little conversations with the pandit on various topics. Another struck a little bell a number of times on each round. There were calculations of dates, completion of short poems and other items.

After the hundred points had been made the pandit

meditated for a little while, then answered questions relating to the items, and finally repeated the whole.

Later I had the good fortune to meet this expert in the State of Limbdi. We spent much time together during my stay there, and he was good enough to explain to me some of the methods of memory culture in vogue in his profession.

Though I am writing this book for the benefit of students, and others who want to improve their minds and memories in general, not for spectacular purposes, the reader who cares to do so may comparatively easily perform many of the feats of *Ashtavadhana* with the aid of the methods prescribed in this book, and a reasonable amount of practice. The training should be gradual, and one must be particular about cleanliness of life and thought, and general calmness of mind. Otherwise there is real danger of overstrain. I do not recommend people beyond middle age to attempt these feats.

I will explain how some of the feats can be done. The student will easily arrange the others for himself.

First of all have in mind 100 places. I will assume that you have adopted my system of Sounds, Towns, Animals, Materials, Races, Locomotion, Shops, Clothing, Foods and People, as given in the last chapter, and that you know your "places" thoroughly.

You have twenty people sitting before you, and you will attend to each of them five times. You first assign five of your places to each.

Let us suppose that the third man is to give you a sentence consisting of five words in English. His squares will be the first five towns: Tokio, New York, Manchester, Rio de Janeiro and London. He says: "My third word is 'looks'." You can make a picture of a man looking afar, perhaps shading his eyes with his hand, or perhaps a picture of a person looking into a microscope. The connexion of this with Manchester would be easy for me, for it was in

Manchester that I studied geology and examined many rock-sections and other things under 'the microscope. On the next round our third gentleman says, "My fifth word is 'pretty'." A pretty lady would do for my picture. London in my experience has been largely Oxford Street and Regent Street, where the ladies buy their pretty things. Next, Mr. 3 says, "My second word is 'garden'." You must associate this with New York. I would think of the roof gardens on some of the tall buildings of New York, which are already familiar to me. On the next round, "My fourth word is 'very'." Now "very" alone has no sense, so I must think of a similar word—*verre*, the French word for glass, jumps up in my mind. This must be connected with Rio de Janeiro. On one of my visits to that town I stayed in an hotel which had a huge plate-glass window. Now the fifth round: "My first word is 'my'." Again a meaningless word; turn it into microphone or mica. To join microphone with Tokio, I would picture myself as I once gave a lecture there—not however, using the microphone that time. Your connexions, and your towns, perhaps, would be quite different from mine.

At this stage in the proceedings you still have no idea of the sentence. You have not tried to remember the first round while going on the second round. Each time that you have associated an object with your town you have immediately forgotten it and thought no more about it—*this is imperative*. Only at the end of the experiment, when you have received the entire one hundred items, and you are asked to state them, you will run over your towns, Tokio, etc., and will easily bring out, "My garden looks very pretty."

In other languages you will follow the same procedure. If it is a language that you do not know, you will have to treat the words as mere sounds, and find

homophones—known words having similar sounds—for all the five.

Let us suppose that the ninth man gives you a number, or fifteen digits, divided into sets of three. His “places” will be the first five Races: Tibetan, Indian, American, Russian, Liberian.

On the first round perhaps he says, “My fourth set is 364.” You might at once translate this into ‘major,’ and then connect: Russia—Red army—major. On his second round Mr. 9 may say: “My second set is 589.” Not seeing immediately an English word to my liking to represent this, I think of ‘lavabo,’ which is concerned with washing. I connect this with my memory of the frequent bathing of the people of South India, which struck me very forcibly on my first arrival there. And so on. At the end you will reel off the fifteen numbers without difficulty.

Now I will suppose that one of the people sets you the task of multiplying five figures by four, let us say 47352×9463 . For the act of multiplication time must be allowed afterwards, because during the giving of the items you will receive only the figures, in five sets, 47, 3, 52, 94, and 63. The giver may say, for example, “The last two numbers of my multiplier are 63,” and so on. You will set down perhaps “gem” in his fifth place.

How will you do the multiplication? There are several methods. I was taught that of the Hindi “Iluvati,” as follows. First multiply 52 by 63 ($52 \times 60 = 3120$; add $52 \times 3 = 156$; total 3276). Remember and set aside the 76 (coach, or cash, or cage), and remember 32 (moon) to carry forward. Next multiply 3 by 63 and add the 32 ($189 + 32 = 221$). Remember and set aside the 1 (tea) and remember 22 (onion) to carry forward. Thirdly, multiply 47 by 63 ($47 \times 60 = 2820$; add $47 \times 3 = 141$; total 2961) and add the 22, making 2983. So now you have 2983176—in words:

nap, fume, tea and cash. Remember these four words, and forget everything else.

Now you may proceed to the second part of your task. 47352 is to be multiplied by 94 in the same way ($52 \times 90 = 4680$; add $52 \times 4 = 208$; total 4888). Set aside 88 (viva—waving flags, etc.), carry 48 (roof). Secondly, multiply 3 by 94, and add “roof” ($282 + 48 = 330$). Set aside 0 (sea), and carry 33 (mamma). Thirdly, multiply 47 by 94 ($47 \times 90 = 4230$; $47 \times 4 = 188$; total 4418; plus 33 = 4451). In this second part you have 4451088—in words: roar, foot, sea, viva. Remember the four words and forget the rest.

Now to add nap—fume—tea—cash to roar, foot, sea, viva. But cash and roar lie outside, as the second multiplication (94×47352) was in hundreds. So you add nap—fume—tea (29831) to foot—sea—viva (51088) and obtain 80919—in words: face—bee—tub. So your result is “roar—face—bee—tub—cash.” At the required moment you can translate this back into numbers, 448091976. The five words can be placed in the questioner’s five ‘places,’ as you no longer need his original numbers.

Some may prefer to follow the ordinary European mode of multiplication. If so, they had better prepare a special “room” for this task. I can explain it best by a diagram—as on page 134—which must have three places across and five down. I will assume that the fifteen places are made of Occupations.

On looking through the five “places” of the man who has given you a multiplication to do you will find, let us say, rock—home—lion—bear—gem. This tells you that you have to multiply 47352 by 9463. The working then is given in the table on page 134.

So the answer is: Furore—tubs—shy cub, the words being read *backwards* in this case, because the working is from right to left.

A third method of multiplication suitable for those who

Architect	Butler 1 4 2 Narada	Carpenter 0 5 6 jewels
Doctor 2 noses	Elephant-trainer 8 4 1 turf	Farmer 1 2 scent
Goldsmith 1 8 foods	Harbour-master 9 4 0 syrup	Ink-maker 8 steel safe
Journalist 4 2 6 joiner	Kitchen-maid 1 6 8 full jet	Laundress
Minister 4 4 8 furore	Nurse 0 9 1 tubs	Ostler 9 7 6 shy cub

can readily visualize the original terms is shown in the following diagram, which requires nine "places," which I will make by number-words of games and sports for the purpose—

$$47352 \times 9463$$

Tennis	$3 \times 2 = 6$	shirt
Hunting	$3 \times 5 = 15 + 6 \times 2 = 27$	countryside
Marbles	$3 \times 3 + 2 = 11 + 6 \times 5 = 41 + 4 \times 2 = 49$	bowler
Racing	$3 \times 7 + 4 = 25 + 6 \times 3 = 43 + 4 \times 5 = 63 + 9 \times 2 = 81$	tipster
Lacrosse	$3 \times 4 + 8 = 20 + 6 \times 7 = 62 + 4 \times 3 = 74 + 9 \times 5 = 119$	beat (stick)
Chess	$6 \times 4 + 11 = 36 + 4 \times 7 = 63 + 3 \times 9 = 90$	sitting
Golf	$4 \times 4 + 9 = 25 + 9 \times 7 = 88$	fairway
Football	$9 \times 4 + 8 = 44$	rugby
Billiards	4	red (ball)

The answer is remembered in the words: red—rugby—fairway—sitting—beat—tipster—bowler—countryside—shirt, representing 448091976.

This mental arithmetic is not difficult, but it requires practice. It is only the real experts who include such multiplications in their round of ten or twenty people.

SECTION V

THE MIND AT WORK

CHAPTER XX

READING AND STUDY

READING can be made into an opportunity for the development of mental power. Its effect is very often quite the reverse, for there is scarcely anything more destructive of mind organization and the power of thought than the habit of promiscuous reading without purpose and without afterthought or forethought.

If you know any people who cannot read or seldom read, you may have observed that the *condition* of their minds is often superior to that of reading people. What they know they know well; their ideas are vivid, and available when they want them—but we must offset against this advantage a great lack of mental content.

There is no reason, however, why we should not have perfect clearness and vigour of mind along with ample knowledge; and indeed this can be brought about by reading in the right manner. We shall perhaps read a little less than we did before, but we shall read *well*.

For this purpose I recommend the advice of Emerson: "Read for correction, not for information." In other words, think first and read afterwards. Some few people read first and think afterwards, which is a good thing, though not the best; but I am afraid that most people just read and do not think at all.

The rare people who are really going to profit by their reading are those who think first and read afterwards.

If you have half an hour for reading, spend ten minutes in reviewing your own knowledge and thought on the subject—even if you think you have none, you may engage in wondering about it—and then read for twenty minutes. Or,

if you have only a quarter of an hour to spare, think for five minutes and read for ten.

This means that when you pick up your book to read, let us say, a chapter on the habits of elephants, you will not immediately open the book and plunge into the subject. You will first sit with the book unopened on your knee or on the table, and say to yourself: "Now, just what do I know about the habits of elephants?" It may be much, or little, or next to nothing, that you know, but whatever it is you must make yourself review your own knowledge before you start to add to it. Then you may open your book and begin to read, and the result will be that you will understand more than usual; and you will remember more than usual, indeed, nearly all, of what you read.

Your mind has been awakened to the subject; its own knowledge has been rearranged in an orderly form, and many questions, definite and indefinite, have come into view. The expectancy engendered by thinking before reading provides the mind with hooks to take up many points which otherwise would scarcely be noticed, and the arrangement of your old knowledge offers a place into which each piece of new knowledge will fit.

This practice puts the mental house in order, opens up and tidies the most unused drawers and boxes, and prepares the mind for light, as no other kind of reading can. First of all you have ideas of your own—then you correct, enlarge and increase them by reading. You gain not only knowledge and a well-ordered mind, but also exercise that results in power of mind and will.

Even if you are merely reading a story or a novel, why not sit for a while musing on the situation that has arisen? What would you do if you were in the position indicated, what would you make the characters do if you were the author?

This mode of reading has also another great merit; it

prepares one for a fruitful old age. Everyone who wants to keep his mental powers unimpaired after the decline of the physical senses should have a mental hobby, and give a little time to it from three to five days each week—not every day, for that tends to fatigue.

It is best always to have on hand a good book, on philosophy, or history, or travel, or science or any other subject, to which one can turn several times a week for mental recreation. There should be no thought of reaching the end of the book; it is to be lived with, and the method of reading it should be that in which one thinks first and reads afterwards.

I recommend every young man or woman when leaving college or high school to keep up one of his subjects of study as a mental hobby, or to take up some other subject in which he is interested. It does not matter what the subject is—a branch of mathematics, history, biology, geology, psychology, moral philosophy, economics, political science, astronomy, chemistry, religion, art; any one of these, or any branch of one of them.

The most important fact in connexion with this study is that the student will be using his mind under the control of the will, that is to say, by determination from within, not merely in response to the stimulus of everyday events and needs, as is the case when we think about most of the affairs of life.

If a man has been thinking only in response to external stimuli, it is almost certain that when the physical powers of hearing, sight, etc., begin to decline and external things do not make as strong claims on attention as they did before, and curiosity begins to disappear, mental activity will also diminish.

But when a man has used his mind from within, has accustomed it to work under the impulse of his own will, there is no reason why his mental powers should not continue to improve even into advanced old age of the body.

There are still other benefits resulting from the possession of a mental hobby. You have sooner or later the satisfaction of feeling that you are the master of some line of thought or subject of human knowledge. You know as much as almost anyone does about it. This gives you confidence, and you feel also the strength and the indescribable happiness of the inner sense of will.

For the purpose of these considerations I may divide books and articles into three classes: (1) novels and stories, intended for relaxation and for imaginative enjoyment, (2) books of travel, biography, history, literature, politics, and human subjects generally, intended to instruct or elevate, and (3) textbooks and technical works, intended to give full and exact information in the minimum of words on the subjects treated in them.

The last class of books are not for reading, but for study. In this case there seems to be a difference of opinion: should they be read quickly, or slowly with meticulous attention to detail? My answer to this problem is: both. First read your current chapter quickly to get the high lights, the main tendencies, the chief headings or topics. Then go over the heading or topic again with close attention to the detail.

In our study of any complex subject, we have to deal with such a vast mass of ideas that it is not practical to learn them *seriatim*. The student who tries to give equal attention to each point as it comes up will soon become a very dull student indeed. He will resemble a person who in real life meeting with, let us say, a dog, will first look at its nose, then eyes, ears, neck, shoulders, back, rump, and tail, and at last will declare to himself with an imbecile kind of sagacity, "Ah, that is a dog." An intelligent person will first see that it is a dog, and then study it in detail if he wants to do so.

So our student should understand the subject and nature of the chapter or topic he is studying, before studying it closely. His study will then fall into groups, under definite headings.

When the main topics are clear let the student turn to detail. Then very soon the apparent multiplicity of detail will disappear, as the ideas connected with a main topic become consolidated in the mind. To a chemist, for example, the properties and reactions of, let us say, sodium, become one unit, just as we think of a book as a unit idea, not of the paper, ink, cover, binding, etc., as a number of things to be individually remembered.

At this stage the subject will seem easy; all is simple to one who knows. I have seen students looking aghast at examination papers such as they will have to meet in perhaps a year. With white face the student mutters, "I shall never be able to answer." A year later, the same student looks at the paper, and remarks loftily: "Very simple; nothing in it," and when he becomes a teacher later on, he says: "I do not know what examination papers are coming to in these days; in *my* time they used to set stingers, but now it is all kindergarten stuff."

In practice, then, when you have sorted out your groups or headings, or such of them as you immediately need, pick out the principal fact in a group and make a thorough study of that, committing it to memory.

Incidentally, it would be well to review it in memory every day for a week, for new knowledge is like young plants—they must be watered regularly while young, until they are strong enough to stand the slings and arrows of outrageous fortune without outside help.

As to the subsidiary facts in each block—a mere careful reading of them with reference to the main fact will be sufficient to impress them strongly on the mind, and if at any time you are called upon for an account of these minor things, you will be able to recall all about them by thinking first of the main fact which you thoroughly know, and mentally inquiring their relation to it.

For example, in history, one would study thoroughly the

most prominent monarch in each dynasty and the principal fact, event or personage in each reign, and then link the reigns together in a series or plant them in order in a "house"; or in chemistry one would study thoroughly chlorine as one of the halogens, and sodium and calcium, and such typical elements, thoroughly, and associate other members of their series with them by an after-reading of a far less searching kind.

The secret of success in the study of complex subjects is to take one thing at a time, get hold of it firmly, stow it away out of sight, and pass on to the next. When the second idea is quite clear, bring the first out again and add the *two* together. Never try to put more than two together at one time, and never hurry.

Many a student fails because he will not take one thing at a time and form a clear idea of that before passing on to the next. I have known students to grab feverishly at a number of ideas at once, and fail to grasp any of them clearly. Not feeling sure of one fact which they are supposed to have learned, they try to keep an eye upon it, so to speak, lest it should slip away while they are learning the next; and the result is that the new idea is not properly understood or learned.

There is a little story of an Irish farm labourer who was once sent by his master to count the pigs in the yard. After a time, he came back scratching his head and looking sorely puzzled: "I counted ten of them," he explained, "but there was one little fellow who ran about so fast that I could not count him at all, at all."

It is a fact that unless we make our ideas stand quietly, and look over them singly, they run about so much that we cannot grasp them clearly. It is necessary to get each new idea into a corner, from which he cannot escape, and then examine him and watch him very carefully indeed.

If the student will not do this, he is like a person trying

to run with a big armful of oranges ; one falls over ; he makes a desperate clutch at it ; another goes over on the other side ; and soon all the oranges are rolling on the ground.

It is best to make the new idea as simple as you can at first, so that it may easily add itself to knowledge already existing in your mind. In every case in which you are learning from a book it is a good plan to simplify the sentence you are studying by taking away all the qualifying words, making a mental picture of the essential idea, and then adding to this image one by one all the various qualifying attributes. For example, you read of the discovery of Lithium—

“In 1817, Arfvedson, working in Berzelius’s laboratory upon a petalite from Uto, Sweden, discovered an alkali which he found to differ from those already known in the following particulars: (1) in the low fusing points of the chloride and sulphate; (2) in the hygroscopic character of the chloride, and (3) in the insolubility of the carbonate.”

Simplify the idea: Arfvedson discovered an alkali. Make a clear mental picture (not in words) of Arfvedson in the act of discovering an alkali. Repeat the idea several times until it becomes familiar. Then add to it the idea that the discovery took place in a laboratory. Picture the discovery in the laboratory; add the idea that it was Berzelius’s laboratory; next give the whole idea the aspect of 1817; the date may easily be remembered by noting that 18 is followed by 17, which is one less. Get the whole idea clear that, in 1817, Arfvedson discovered an alkali in Berzelius’s laboratory.

How did he make the discovery, and what exactly did he discover? He was working in Berzelius’s laboratory in 1817 upon a mineral silicate named petalite from Uto, Sweden, when he discovered the alkali. Be sure that your idea of an alkali is clear, and recall to mind familiar examples of alkaline properties, such as those associated with sodium and potassium. He found that it differed from the known alkalis—study them together; compare them carefully, noting the

resemblances and differences. Finally repeat the whole idea from memory, and thus slowly work through the textbook.

I have tried to show how each sentence must be worked upon *with thought*, not simply read and repeated as a whole; how the qualifying words, phrases, and sentences must first be removed and then added again bit by bit. The aim is to transfer the form of words from the printed page, not into a form of words in the mind, but into a living mental image which its owner can express in any words or from any point of view he may choose.

The image may be an inner visualization, audition, or other sense imagination of the object, or a simplified or symbolic picture. Most students of history, I feel sure, will find it more difficult to remember: "The period of Charles I was one of continual parliamentary, religious and martial strife," than to make and keep a small mental picture of the handsome king, with an excited parliamentary group on one hand and a body of Bible-carrying Roundheads on the other.

When such picture-ideas have been made they should be compared with each other, two at a time, in accordance with the four Roads of Thought. Suppose, for example, that in English history we have studied the reign of Charles I, and are familiar with it, and we now wish to study that of James I. We may make another little picture of that authoritative monarch sitting upon his throne surrounded by his favourites in succession, and then go on adding details to each picture, inquiring in what respect, with reference to the whole and to each detail, they resemble and differ from each other.

Let us take a simpler instance from elementary geography. Suppose you are about to study the geography of India and you already know quite well that of England. As you come to each point that is new to you, compare it with a similar point in the geography of the country that you know well. For example, the lower part of India is a triangle with the

point to the south ; England is also roughly a triangle, but with the point to the north. India is bounded on the north by a long range of mighty mountains, whereas England is bounded on the north by a very short range of small mountains. The large rivers of both countries flow into seas on the east and the west, but in England the rivers, like all the other natural features, are comparatively small. On the west of India we have a projecting nose (Kathiawar), just as Wales sticks out on the west of England.

In this manner you may proceed to compare the numbers, sizes, shapes and positions of rivers and mountains with those you already know ; and go on to compare the political divisions of the countries, the natural products, the general and local governments, etc., with those that are familiar to you.

In all cases it is better not to try to compare two unfamiliar things, but to compare the new unfamiliar fact with an old familiar one. As I have before remarked, all learning consists in adding something that you did not know to something that you do ; nothing can suddenly heave into your mind a new piece of knowledge which has no relation to anything that you already know.

Merely as an exercise, one might compare a number of large complexes in pairs, such as a forest and a park ; a park and a mountain range ; mountains and the sea ; the sea and the sky ; a house and a factory ; an elephant and a whale ; a law book and a textbook of science ; a poem by Tennyson and one by Wordsworth.

No doubt it will seem easier and quicker to many students merely to read over and over again the portions of their textbooks that they require, in the hope that some of the ideas they thus gain will stick in the mind. There is some excuse for the student, who in these days is terribly harried by a vast and varied host of teachers—each with his own coagulation of indigestible mental bread—if he finds himself too tired to think. Yet the fact remains that the only

knowledge that is really retained for long is that which has been acquired with some effort—a sudden and incisive effort of perception, or a long, slow and deliberate pondering of the facts or ideas.

Before closing these hints on study, I must impress again upon the student the great importance of concentration, especially in preparing for examinations, for just as an artist surrounds his picture with a frame or stands his statue on a pedestal so that its beauty may be isolated and thus more perfectly seen, so must the thinker concentrate upon his idea to see it clearly. As that idea is a mental thing it cannot be surrounded by a frame. There is this distinction between outside objects and things of the mind, that the former are defined by their boundaries or outlines and the latter by their centres. Let the student stick to his centres.

Let us suppose that a student is going to read several pages of a textbook by himself. There are perhaps five ideas which he must understand and make perfectly clear to himself. He begins on the first page with idea number 1, gives to it the full power of his attention, and obtains a clear impression of it. Then he goes on to the next page, to study his second idea. But he is a little anxious about idea number 1. He feels that he must keep half an eye upon it lest it escape from his mind and be lost. He is not quite sure that he possesses that idea unless he can see it or feel it. The consequence is that he cannot give full attention to idea number 2. Therefore he does not grasp it as well as he did the first idea. It is less definite to him, and his anxiety is therefore greater than before when he has to turn to idea number 3. Still less power of attention can he give to idea number 4, since he is anxious about number 1, very anxious about number 2, and very, very anxious about number 3. His knowledge of idea number 5 is likely to be vague in the extreme.

When he has finished his whole course of study his knowledge of the entire subject will prove to be very unequal

and mottled. Some few things are clear to him, others are hazy, others are invisible, and his success in the examination depends upon his luck with the questions. Further, his knowledge is not going to be of great use to him for deeper or more advanced studies, when in its elementary parts it is so unequal.

This unfortunate student reminds me of another story of an Irishman who was working on a farm, and (like him whom I have already mentioned) was one day sent out into a yard—to catch some little pigs. He ran after them and caught one by the tail. Holding on to that with his left hand, he ran after another and caught it. Now holding on to two of them, he ran after a third. It is not recorded how he finished the task. He ought, of course, to have caught one and locked it up, then another, and so on.

That is what the student ought to do with his ideas. Let him fully understand idea number 1, and then lock it up by an act of concentration. When he has made the idea clear to himself, let him lean back and look at it calmly and steadily for a quarter of a minute. He can now drop the subject while he turns to idea number 2, confident that number 1 will come up in his mind when he wants it. Thus he will be able to give the same full attention to number 2 that he first gave to number 1, and so on to number 5.

Using this method of concentration, his knowledge will be equal, and he will not forget. There is nothing like anxiety to produce both forgetfulness and feeble-mindedness; but the experience of the value of concentration in study soon produces confidence in its power, and grants a new lease of life to the fatigued and worried student.

It is also a great merit of concentration that it enables a student not only to take up and retain a new idea, but also to drop one thing and turn to another. This ability to forget, to leave things alone mentally when it is not the proper time to think about them, is of great value.

CHAPTER XXI

WRITING AND SPEECH-MAKING

I PRESUME that no one will venture to write an article or deliver a lecture who has not studied the subject of which he intends to treat. It is, however, well known that even when that has been done, a writer or speaker often forgets, at the moment when he needs them, several points and illustrations which he had intended to present in connexion with his subject. This can be avoided by the following means.

Supposing that a speaker has considered the occasion of his article or speech, and the matter at his command, he will have selected four or five main branches of his subject to be expounded in a predetermined order. These branches he can summarize each in a word or two, and then "place" the symbols of his ideas in the parts of the hall in which he intends to speak. If he does not know the hall, he may place his headings in a familiar "house" such as I have already described in Chapter XVIII.

The next thing for him to do is to consider those main headings or items one by one and extract from each idea all the detail that he can, by the process of expansion of ideas given in Chapter XV. This will prevent possible oversight of important details and also provide suggestions for illustrations and similes of all kinds.

When this is done, two or three selected sub-headings and illustrations may be placed under each head, each summed up in a word or picture or symbol and these associated with the places in the "house."

In memorizing the points of a speech it is far better to use the ancient system of "places" or "houses," than to form the sub-headings into a list or series connected by the Roads

of Thought. The Roads of Thought, however, should be used jointly with the imagination for fixing the required points in their respective places, so that when the speaker is approaching the end of one of his topics, he has only to turn his attention for a moment to the next "place," and all that he wished to recall will spring up before his mind.

In the course of a debate one may desire to remember the points of an opponent's speech, with a view to referring to them, perhaps in order, when one's own turn to speak arrives. One method is to write these on a piece of paper and then turn to the notes one by one; but this generally has rather an enfeebling effect. Merely to memorize them is not very satisfactory either, for it nearly always involves a certain amount of mental preparation of the second point while one is still speaking about the first.

A good plan is to fix your points as they occur, in your "house," or, if you like, upon the different parts of the person with whom you are debating. Each point can thus be fixed and left to take care of itself, while the mind is kept free to consider other matters as they come up. It also gives one the advantage of being able to keep one's eyes on one's opponent throughout the whole of the debate.

What I have written with regard to speeches applies also to a large extent to writing articles. I consider it a very good plan to ruminate before making any notes for a forthcoming article. Sit quietly; turn your attention to the subject; expand it with the aid of the Roads of Thought. While you are expanding it certain items will impress you as of special interest. Remember those. Next consider your readers—what they already know, their point of view and their interests. You should now be ready to decide in what order to discuss the various points of your subject. Write these down if you like, or better, keep them in a "house" until you are ready to settle down and write the article.

I would strongly recommend speakers and writers to go

over the subject mentally several times on a number of successive days, before proceeding to speak or write. In such rumination the mind often finds ideas, points of view, and similes which may otherwise remain for ever unknown.

Before closing this chapter I may say a few words about learning poetry. When you take up a verse, first understand it. Then, in order to remember the words, it is a good plan to impress upon your mind the first word, the principal word, and the last word of each line in turn. Learn the first line. Repeat it to yourself. Forget it. Learn the second line. Repeat it. Recall the first line and repeat both together. And so on.

While learning, ask questions, and answer the questions in the words of the poem. As an example, I will take from Shakespeare's "Hamlet, Prince of Denmark" a portion of the advice of Polonius to his son Laertes, at the moment of his departure to a foreign country—

Neither a borrower nor a lender be;
For loan oft loses both itself and friend,
And borrowing dulls the edge of husbandry.
This above all: to thine own self be true;
And it must follow, as the night the day,
Thou canst not then be false to any man.

Let us consider the last line. The principal word is "false." The subject is falsity. To get the feel of the line, notice that the first word is "thou," the last "man."

Now to questions. Whose falsity is referred to? *Thou* canst not then be false. Is it a matter of choice? No. *Thou canst* not then be false. When? As mentioned before, when following the advice, "To thine own self be true." False in what way? False to any *man*. Not to a particular man? No. *Thou canst* not then be false to *any* man.

But do not be content with mere learning of the words. Poetry, by reason of its beauty, tells more than its words; it calls up new life in us, to witness truth felt as well as known.

CHAPTER XXII

MORE CONCENTRATION

IN view of the great value of concentration of mind, I will now give some exercises—not by any means to be imposed on the student, but useful perhaps as playthings for him at odd times.

1. Sit down in your room and look round carefully, noting all the little things which it contains. Now close your eyes and make all those things go before your mind in imagination, until the entire procession has passed by. If you know an alphabet of foreign forms, such as the Devanagari, the Arabic, or the Russian, make the letters pass one by one in procession before your imagination until the whole series is complete. If a break occurs in the series, begin again.

2. Take a walk in imagination, along a familiar road or street, noticing all the details that you can remember as you slowly pass them by; return by the same route. If the attention wanders from the path that you have chosen for your walk, make it come back and begin the walk over again from the beginning.

3. Pass in imagination through some previous experience of your own. Suppose, for example, you have risen in the morning, taken breakfast, gone to college, listened to a lecture, worked in the library, returned to lunch, and so forth, through all the general incidents of the daily round.

4. Select some particular sight or sound that is present, say the ticking of the clock. Ask yourself what is the cause of that. It is due to the swinging of the pendulum and the movements of the spring and wheels. But what causes all these? Try to run back along a series of images, following the clock back in its wanderings; see how it was placed in position, how it travelled to where it is, where it came from,

how its parts were put together and made, where and by whom, how its materials were procured. Imagine all that has contributed to make it what it is. It does not matter very much whether your imaginings in this practice are right or wrong; the exercise will train the mind to run through a series of coherent imaginings without missing the point.

5. Go out for a walk in imagination, as you did before, along some familiar way, but on coming to a selected building or scene, stop and examine it. Try to picture it in detail. If you find that the mind begins to tug in its efforts to get away, move about into different positions every few moments and try to picture the scene from these different points of view. You will probably find that you know very little of the details of the buildings or the scenes with which you thought yourself quite familiar.

In this exercise dwell with perfect gentleness upon the scene you are trying to recall, as though you were trying to remember a fading dream. It is not success in recalling that is the important thing in these exercises, but the development of mind that comes from trying. Stop when you are tired.

6. Look carefully at the wall of the room in which you sit; notice everything about it, the objects that are fixed upon it or are standing against it, the form, size and proportions of everything connected with it. Now shut your eyes and try to picture the whole at once. You will find the image hazy and indefinite. Imagine then various small parts of it in turn, and you will see how much clearer these are.

Again, picture to yourself the figure of a man. You will probably find it indefinite, but when you look at one small portion of the image that part will become clear while the rest will tend to disappear. If you make a hand or foot clear, the head will vanish; if you make the head clear the lower part of the body will have gone. Whatever may be the image that you examine in this manner, some part of it will elude you, and when you look at one portion the

others will grow faint or even disappear. Practise, therefore, the following method of mind-painting.

Take a picture of a human face. Place it before you and examine a small portion of it, say an eye. Close your eyes and think of that portion. Repeat this several times, until you can form it clearly. Now take another part near to the first—say the other eye—and concentrate upon it in the same manner. Next recall the first eye and make an image of the two together. Now deal with the nose in the same way, separately, and then picture together the two eyes and the nose.

Compare your image with the original every time, and go on adding part after part until you can imagine the whole face without great effort. In one sitting you may succeed in reproducing only one or two features; it will take time to complete the portrait. If you thus do even one picture perfectly, you will find a great increase in grasp of imagination.

You will find it a great help in making such a mental picture, to see that all the details within it are congruous with one another. For example, you might picture a cart drawn by two horses, but if you attempt to imagine it as being drawn by two kangaroos you will find the matter much more difficult. It is not possible to hold two disconnected images or ideas before the mind at the same time, but it is possible to grasp them at once if the main idea includes both at the same time, or something common to both.

I can picture a kangaroo and a horse together by centring my attention on their common characteristics and thinking of both as animals. I can picture a horse and cart together because they occur together in common experience as a unit having a single purpose. But it would be comparatively difficult to hold together the ideas of a kangaroo and a cart. The mind would tend to run from one to the other, losing sight of each alternately. If, however, some common relationship were discovered and made the centre of attention,

the two ideas would readily cling together, instead of repelling each other by their incongruity. It is useful therefore to find the idea which makes the group really a unit, and make that the centre of your attention.

7. Select a picture of any pleasant scene. For example, a Hindu might choose the well-known picture of Shri Krishna in the form of a boy seated on a rock, playing a flute, while in the background happy cows graze on the bank of a peaceful river, beyond which a range of tree-clad hills protectively encloses the gentle scene.

Take such a picture ; examine it carefully ; close your eyes and reproduce it in imagination. Now begin to narrow down the view, and observe how much clearer the scene becomes as you diminish its extent. First drop the clouds and the mountains in the background, then the trees and the river and the cows which are grazing by it, and so on little by little until you have nothing left but the form of the boy. Go on slowly in the same way, making the image clearer and clearer as it grows smaller, until you have lost the rock and have only left the upper part of the body, the head and the face.

Hold that image for a moment, and then begin to expand it again, trying to keep the whole as clear as the small piece to which you had contracted it, and as you build up the entire picture again, point by point, make every effort to retain for the complex unit the clearness which you were able to secure in one small portion of it.

8. Place some pleasant and familiar object, such as a small statue in front of you, at a little distance, preferably in the middle of the room. After examining it, close your eyes and imagine it clearly from the position where you are, as you would look at it.

Next imagine it from the back, not by turning it round in your imagination, but by transferring your idea of yourself to a point on the opposite wall. Imagine yourself not to be

sitting where you are, but against the opposite wall, looking at the object from the opposite side.

When you have both images well made—from the front and the back—try to imagine them both at once, as though you were looking at the object from both sides at once. To do this effectively you will need to get rid of the idea that you are facing the object from one point of view, and imagine yourself as on both sides of it, regarding it from both directions at once.

This exercise can be extended to the above and the below, if desired. It teaches us at least to remember that usually we have a very limited point of view. Even an artist—a good observer—rarely thinks of the roots of a tree or the shape of its top, as seen from above.

9. Take up now a simple object, such as a flower or a box of matches. Examine it; look into the interior. Close your eyes and imagine it. Imagine that your consciousness is at the centre of the article and that you are looking at it from within. Next, expand your consciousness gradually until you are no longer a point in the middle of the object, but have become a large ball with the object in the middle of yourself.

10. Select an object which you have already used in your exercises in concentration. This time, instead of building the picture up little by little, call it up complete. Command it to appear. If you have used the picture of Shri Krishna, now, with your eyes closed, look into empty space and mentally call out the name of Shri Krishna, trying to discern the form. Suddenly the complete picture will spring up before your mental vision, in idea or in form.

11. Make an effort to think in images, without the use of words. Very often we feel that we do not know a thing until we have succeeded in recalling its name or verbal description, though its appearance and qualities may be quite familiar. Thinking in words is thinking in symbols, and in that

there is much danger of missing the truth, for it is easily possible to manipulate and rearrange the symbols in a manner to which the facts would not conform.

As an exercise one might let the following ideas form a succession of thought forms, without words: horse, cow, milk, moonlight, moon, sun. Picture a horse, trying not to think of the name of it. If you now drop the picture and then call up the image of a cow, you will ordinarily have to think the word "cow" between the two. This is the usual process in the chain of thought: name (horse), form (horse), name (horse), name (cow), form (cow), name (cow), name (milk), form (milk), name (milk), and so on. In this practice however, try to leave out the names, and let the picture undergo a continuous gradual change.

Having pictured the horse clearly, begin to modify it. Let the contour of the back, the slope of the neck, the shape of the body, the form of the legs and hoofs, the tail, the setting of the head, and other details gradually change from those of a horse to those of a cow, until the transition is complete. Then proceed to concentrate the attention on the milk which comes from the cow, and gradually lose sight of the parts of the cow until only the stream of milk is seen. Make this undergo a gradual change. Thin out the liquid stream, letting it lose its definite outline and opacity, but retaining the colour though making it paler, and to this nebulous stream add outline and surroundings until you have a stream of moonlight. Next trace the moonlight to the moon in the dark sky, adding this to the picture. Pass away from the moonlight and let your attention centre on the moon itself. Gradually change this form. Let its outline remain but expand, and its colour change, until you have the great golden-red ball of the rising or the setting sun.

Many may think that these practices of concentration involve great effort, but little result. It is not really so. Think of the efforts that you made as a child when learning

to write, how long it took you to gain control of your hand and pen. That was a greater effort than this, for, however much the mind may seem to plunge about, it is made of far more yielding and plastic stuff than is your arm or hand, and is therefore easier to control. Indeed it is easier to learn to control the mind than it is to learn to write. Think, again, of the vast number of exercises a violinist will practise to render his fingers supple, obedient, and expert. Give the same, or far less, effort to mental training, and you will surely be delighted with the result. But there should be no physical strain in all this—that is imperative.

CHAPTER XXIII

MEDITATION

ALTHOUGH it does not come within the purview of the average student, it will not be out of place for me to describe here the process of meditation, and explain how it can be done.

The best preliminary exercise is what has been called the daily life ledger. Spare a little time in the morning or evening to review the experiences and doings of the day and think about them in a gentle manner. Quite apart from the mental exercise which it gives, this greatly rests the mind and emotions, as it combs out the tangled threads of daily life. It also ploughs and harrows the field, so to speak, in preparation for experience to come.

It is well to form a habit of voluntary reflection also with reference to any matter of current interest to you. For want of this habit the rich variety of our modern life leaves little or no knowledge behind it in the mind, and fails to awaken thought. Very often when subjects such as chemistry, history, and economics are being studied, or when languages are being learnt, the student makes very little progress. An hour's work makes little impression upon the mind, if twenty-three hours are allowed to elapse before the subject is revised. But in a school or college where the jargon of the students contains frequent reference to the salient points of their studies, a kind of familiarity results, which gives the subject a footing in the mind. The same principle applies in the case of young people who desire to model themselves upon someone whom they admire. Girls attend the moving pictures and sometimes fix upon one of the Stars as their ideal. They are full of enthusiasm while the picture lasts and for an hour or two afterwards, but they lose the point and fail to stamp it on their lives for want of reflection.

Voluntary reflection not only impresses the mind in this way, it starts the process of thought. The collection and review of ideas or mental pictures is one thing. Thinking is another. But after a little time thoughts will begin to come. Then the beginner may do well to cherish them and note them down for future reflection, since they easily evade the memory.

Further, this meditation or voluntary reflection will prepare the way for intuition. It need not be frequent and should not be strenuous. When others snatch up a novel or a newspaper or seek a conversation with some one else to fill an odd quarter of an hour, you may quietly reflect.

I do not think systematic meditation can be well done unless it is first understood. One must therefore consider the theory of meditation.

Meditation begins where concentration ends. The purpose of concentration is to focus the attention upon a small field of mental vision, so that the light of consciousness may be as brilliant as possible; it is analogous to the fixing of a reflector round a light, as, for example, in a searchlight. During such concentration our awareness is at its best.

Concentration involves contraction of the field of mental vision, but meditation involves its expansion. In concentration you gain clear vision; in meditation you try to keep that clear vision but extend it over a larger field and into depths and heights of thought which you have not been able to reach clearly before.

Even a small mind can often do one thing well; even the animal mind can bring one narrow virtue to a high degree of perfection, as in the case of the faithfulness of the dog. What we require to develop is a large mind which can grasp a great deal at once and still deal decisively with the whole.

Yet concentration must precede expansion, lest there be diffusion and indefiniteness, instead of increase of mental

power. Consider this by the simile of a camera. If you take a square box, take out the bottom and replace it with ground glass, or unglazed paper, and make a very small hole in the lid, then stand it on its side and look at the paper, you will see upon it an image of the object that lies before the camera. That is because the same picture always appears at both ends of a ray of light. Have you noticed in summer the sun shining upon the ground through the many shaped but small interstices of thick foliage? The spots are elliptical or round, because they are each an image of the sun.

If you made the hole bigger and bigger, gradually your picture would become blurred and then disappear, because from every point of the object rays of light go in every direction, and when you make the hole larger the spots of light overlap and so obscure one another.

The body of man is like the camera box, and the senses are like pin-holes or lenses which let into his mind pictures of the objects around him. There is one great difference, however, between the plate of the camera and the mind of man—man has memory, by which he continues the images, and reflection, by which he considers them in relation to one another, and forms his own plans.

This limitation of the senses is not an injury to man, but a benefit, for senses and mind are adapted to each other. If we could suddenly increase the input of the senses a hundred-fold, men would become gibbering idiots, unable to cope with such a volume of fact. As it is, the limitation of material that the senses provide is beneficial, as conducive to clarity of impression in the mind, just as the smallness of the hole in the camera provides a clear picture on the plate.

All the same, clear impressions clearly observed by the concentrated mind can become the material for that mind to work upon by meditation, which involves expansion, and increases the power of the mind to grasp clearly more things at once.

Success in meditation therefore implies success in concentration, and in those things which are necessary to that, namely, relaxation of the body, indifference for the time being to what is happening near at hand or far away, emotional calm, and gentleness of vision.

A man concentrating is almost asleep bodily, but his consciousness in the brain is more than ever wide awake. In meditation that wide awake consciousness applies itself to the subject of thought. Meditation is the very opposite of going to sleep. It is a regular flow of thought about an object with regard to which one has no difficulty in concentration. It is not like mind-wandering, in which the chain of thought leads over the hills and far away, and it is not like worry, in which one arrives again and again at the same point, having travelled in a circle.

Meditation is a great act of self-creation. The vivid consciousness obtained in concentration, carried by meditation into the yet unirrigated and finer fields of the mind, is like an open channel for more life. No man has life as full as that which could be his. All men have a hunger for more sense of life. Sometimes ignorant people seek its satisfaction in outward excitement, not realizing that to be a surrender of real life, and an acknowledgment of dependence upon outside things—not upon what is inside the mind itself—for real happiness and life.

In meditation a man may reach conceptions of beauty, or duty, or truth or the grandeur of noble character, loftier than any he has obtained before. As he dwells upon them, they work into him in a creative way, so that afterwards he will be able to reach and hold the higher level with comparative ease.

The object of meditation is not to bring something down, as it were, for the satisfaction of our old personality. It is to take something up, to reach in our thought or feeling something that we have not touched before, and yet to carry up

there the clearness of vision that was ours at the lower levels.

We must take ourselves up. The self that seeks only consolation for the troubles in life, or a pleasant emotional sensation of confidence in something higher than itself, may possess and enjoy its own meagre delights in an inferior sort of meditation that is hardly worthy of the name.

Grateful and comfortable, he of this meditation is like a cat purring in a person's arms, enjoying the luxury of attention from a superior being. But meditation proper is for him who would humanize himself to a higher degree, expand his heart and intelligence, and increase his practical capacity—things which contain the happiness of true life, positive and active, far above the comforts and consolations and hopings which are the resort of many who seek in the mind what they have failed to secure in life.

I hope that my exposition of the theory of meditation has shown that it is not different from thinking, when that is properly done. Suppose that a student has before him a theorem in geometry. To prove it he must think. First—if he knows how to think, or meditate—he will dwell for a while on his data. This is the preliminary concentration—to review the material provided for his thinking. He must be in a position to remember the properties of the lines, angles, triangles, and circles, or whatever they may be. Then, and only then, should he begin the expansion process of considering their relation to one another under the given conditions. I have known many students much troubled by geometry, and I have noticed that in most cases it is because they do not know how to think, and so do not first review the data and only afterwards try to solve the problem or prove the theorem.

At the end of a process of thinking, the conclusion ought to be as clear and certain as the terms from which it is derived. Later that conclusion should be available as simple and self-evident material for further and deeper study. All

the time the thinker or the student is really engaged in making platforms for himself, and then climbing on to them and using them for the building of still higher platforms.

In thinking, we often proceed from the concrete to the abstract. To know beauty we must dwell on objects of beauty.

This principle is very evident in the use of meditation for the development of character. There would be little use in sitting down, closing the eyes and saying over and over again: "Courage, courage, courage" or "Kindness, kindness, kindness." If people do not know what the dials of their watches look like, still less do they know what ideals or virtues really are. They must begin the meditation with concrete examples.

Having chosen the virtue that you want to build into your character, first of all make mental pictures of the virtue in action. If it is courage, make several pictures representing that quality—perhaps a soldier rescuing a wounded comrade under fire; an invalid in pain and wretchedness, but making little of his or her misery, so as not to convey it to others; a person bound to some duty that is drudgery, but carrying it through cheerfully; an artist or a poet who will not give up his love, regardless of the unkind face of fortune; a reformer, whose talents might make him a shining light in politics were he to compromise, but he will not.

With the aid of these concrete examples, improve your conception of the abstract virtue. In the process, make your pictures clear and living, concrete and detailed, solid as a drama on a stage, not flat like a picture on a wall.

Next build the quality into your own character by stepping up on to the stage, as it were, entering the body of the hero, acting and feeling and realizing the scene as a living incident in your own life, and resolving to be that character henceforth.

There is a more passive kind of meditation in which one

does not think directly of the building of character, but simply dwells in thought—expanding it to the full—upon some person looked upon as ideal, or upon some symbolic form. This method is carried to great perfection among the Hindus, who meditate upon the 1008 names—really qualities—of Shiva or of Vishnu, or upon images with many symbols—numerous heads and arms bearing weapons and other objects and making significant gestures, all symbolical of powers and virtues and benevolent intentions.

The idea is that one becomes like that upon which the mind dwells, and so absorbs into one's own character the good qualities represented by the symbols or words.

This method is suitable for consolidating in character qualities already known, not for advancing to new heights. The image is really a mnemonic device, a "house" or set of pegs for remembering a collection of powers and virtues. It cannot show anything new, for the imagination cannot portray what is not known. It is quite possible to picture a gesture as indicating benevolence, but the idea of benevolence may remain very imperfect unless one considers it practically in actual expression in varying circumstances in human life. To have virtue we need to keep very near to our fellow-men, with all their faults.

Sometimes there is meditation upon superior beings, supposed real—heroes, angels, saints, masters, and divine incarnations. In this case there are several dangers to be carefully avoided. In great admiration for the qualities of these, pictured as exceptional beings, there is often the feeling that such perfection can hardly be expected in us ordinary people. This reduces the character-building effect, and also tends to a harsh judgment of our fellow-men, since they, too, are ordinary people, and to them therefore we do not easily attribute the virtues predicated of our beloved ideal.

There is also a tendency to slacken effort and be content

with relatively negative virtues in ourselves—a feeling that since the object of devotion has the virtues and the power we may be content with a lower grade.

There may also be something of the attitude of the football or cricket enthusiasts who go by the hundreds of thousands to see the matches and admire the players, without any serious intention to become such players themselves.

It is, however, in ordinary life that we develop our qualities, and our meditation as a science is best kept very close to that.

Let us now pass on to the art of contemplation.

The fulfilment of meditation is contemplation. As concentration leads on to meditation, so does meditation lead on to contemplation, which may be defined as concentration at the top end of one's line of thought.

Just as it is not well to begin meditation suddenly, but it is best to sit down and quietly bring the attention to the chosen subject—first of all thinking of a large scene and then narrowing down gradually to the special object, and then meditating upon it—so it is not well to end a meditation abruptly.

At a certain point one must stop the flow of thought and dwell for a short time with clear-sighted and calm vision upon the best thing that one has been able to reach. It may be that you have reached a height or depth of thought beyond which you cannot go on to any advantage. At this point your attention begins to waver, your mind begins to lose its hold. Do not then try to go further; do not desperately try to clutch or grasp that splendid conception or vision that is flickering just beyond your reach. Stop where you are and gaze contentedly at the highest you have been able clearly to attain. That is contemplation.

It will often happen that this highest conception has not been the consecutive outcome of your meditative process, but while you were going on with that a new idea burst upon

you in a flash of inspiration. Then you may stop the meditation and give your whole attention to the contemplation of that greatest thing. Such contemplation creates new platforms on which consciousness can stand, so that when you come round again to deal with that deepest thought you will find that it is easier to hold, and that your meditation can be carried further still.

It often happens in daily life that those who are given to meditation catch sudden glimpses of great truths, or splendid ideas, which carry with them some inexplicable evidence of their own accuracy, and one thinks them wonderfully simple, and says to oneself: "Now why on earth did I never think of that or hear about it before?" But beware; if you do not keep your attention on that idea, simple as it is, it will be gone from you very soon and you will be unable to recover its message. It is, alas, true that you must imprison it in a form of words. A great truth put into words is like a bird kept in a cage; some like its song, but it has not quite the note of liberty, the quality of life. Still, write it down, and make it the subject of future meditation.

Even in dealing with scientific subjects, which have not a quality of appeal to high emotion, the same operation appears. Many of the greatest discoveries in science have come in moments of inspiration, when their authors have thought long and deeply on the subject and then given up the effort as a failure, at least for the time being.

In any systematic attempt at contemplation three stages should be followed—

- (1) the attention must be centred on the object;
- (2) thought must be active with reference to that object alone;
- (3) the mind must remain actively centred on the object while its ordinary activities cease.

In the last stage we stop all comparing and reasoning and remain with the attention fixed actively upon the object,

trying to penetrate the indefiniteness which for us then appears to surround it.

It will be seen that in contemplation there is nothing in the nature of sleep or mental inactivity, but an intense search ; you make an effort to see in the indefiniteness something definite, and refuse for the time being to descend to the ordinary regions of conscious activity in which your sight is normally clear and precise. You concentrate again, but this time at the top end of your line of thought.

SECTION VI

SOME PARTING ADVICE

CHAPTER XXIV

USES OF THE WILL

Voluntary Decision. It is a common thing among human beings to wait for the guidance of events. To some extent this is inevitable. It would be folly for a sailing-ship to set out from harbour in the midst of a terrible storm, or for a motor car to undertake a long journey on roads deep in snow. But often it must be confessed that we are not resourceful, so that, one thing being barred by circumstances, we do not make use of the conditions that exist.

One effect of this weakness of waiting on events is that when a choice does offer, decision is difficult. Suppose that we need a month's change of air in the summer, and we have the money to pay for it. The question arises: shall we go to the mountains or to the seaside? Sometimes people wear themselves out in deciding such a small matter. I knew a lady who used frequently to tire herself by trying to decide what dress she would wear, and sometimes she would array herself for going out, and then suddenly at the last moment rush back and change her stockings or even her entire dress. Once, when she was going on a voyage of several weeks, a friend advised her to make a time-table of dresses, and they sat together and made an engagement book of her wearing apparel; the dates were written down, with morning, afternoon and evening in the horizontal columns, and in the vertical columns dress, shoes, stockings, and even under-clothing, were set forth. The lady kept to her programme, and afterwards declared that she had never before felt so free and happy; she seemed to have four times the nervous energy which had been hers before.

There are few things more fatiguing and devitalizing than the habit of indecision in small things. Truly, students

generally have their plan of life laid out for them very fully by others, but even so they sometimes find it difficult to get to grips with their programme. It is so tempting to take up the easy or favourite subject first, and neglect that which is troublesome or dull. But the student who wants to develop the powers of his mind will act by voluntary decision as to what is best.

Sometimes a person will say: "I really cannot decide what to do; I cannot see what is best." Assuming then, that you have fully considered the pros and cons, and cannot decide because they are evenly balanced, or because they do not present sufficient data on which to base a definite judgment, and yet some action is desirable, toss a coin and have done with the matter. The idea is not that the coin will tell you what is best, but that it will put an end to your worry. Be sufficiently decisive, however, not to wish that the coin had fallen on the other side, or to wonder whether to toss it again to decide whether you will obey the previous toss or not!

Voluntary decision is a great help to practical success, as well as to strength and clearness of mind. I remember an account, written by a distinguished man, of the causes to which he attributed his phenomenal success in life. Among these was one which he seemed to prize above all the rest—the habit of making a list early each morning of the things which he had to do during the day. He said that with the aid of this practice he was able to do ten times as much as he could before he adopted it; not because he really worked very much harder, but because he had ceased to waste time in idle and irritating speculations as to what he should do next, and whether he should do it now or leave it until after lunch or until to-morrow. He discovered that these troublesome questions, utterly unimportant as they were, had the power to sap his strength and resolution, so as to leave him unfit to enjoy his work. Their effect was such that he found himself constantly turning aside to some trifling dissipation that

would for the moment divert his mind, such as that of picking up a casual magazine to fill in an odd half hour.

Elements of Success. If you would have success in your life, take each thing that comes and decide how you will use it. No man can do everything, so choose some definite form of activity. Do not be one of those people who follow no definite road, and drift hither and thither towards an old age filled chiefly with disappointments and regrets. Dwell frequently upon the idea of your chosen purpose, so that it becomes a permanent mood. When that is established, many things will serve you which would otherwise be passed by without notice or use. If an architect travels, does he not notice the forms of the buildings in various places, as his fellow-travellers do not? And do not those things then help him in his chosen profession?

Some definiteness of personality and character is necessary for healthy physical existence in the fullest sense of the term. Full health is not merely harmony in our own bodily functions, but harmony also in relation to other people. We must fit into the larger body.

What is usually called greatness is not sufficient for real success in life, unless there is also goodwill for humanity, and real love for some few people. Without love, no happiness, so do not sacrifice people to greatness. For real success, body, emotions and mind must all be well occupied, and in agreement.

If body, emotions and mind are well occupied, character will follow. Character is inward success. Its possessor can make a mark on the world, but he will allow the world to make a mark on him only as he chooses. He will not drift. Nor will he be dependent upon circumstances for his happiness or strength. He will be like the Stoic of old times, who did not bother his head about things outside his power, but took good care to occupy himself with the things within his power. So, before you let anything worry you, ask yourself

if the thing is in your power, and if it is not, turn your attention to something else.

I once knew a family of five brothers who well illustrated the fact that there can be no real outward success without inward success. While comparatively young two of those brothers became successful in business. But unfortunately they had not the inward strength to profit by their outward prosperity and their success proved a curse instead of a blessing. They ate and drank more than was desirable; they did not take any exercise. They indulged their bodies, knowing quite well the danger of it all. At the age of about thirty-five they were both fat and ailing; at forty they were permanently in the doctor's hands; at about forty-five they were both dead, after ten years of utterly miserable life. The other three brothers remained hale and hearty, surrounded by happy families at an advanced old age.

Yet strange to say the friends of the family still allude to the two who died as the successful brothers, and say sadly what a pity it is that the best die young. But really, outward success without inward success leads to failure; and inward success ultimately leads to outward success as well.

Give your body a square deal. Let it have rest, recreation, variety—a reasonable amount of enjoyment of the senses. But exact obedience. When you know what is best insist upon it, in eating and drinking, in sleeping and rising, in working and playing. The body is almost like an animal, and you will find that it is happy when well treated without over-indulgence, which it may at times desire.

Avoid fear. Reason it out of your life. How can it help you? Do what you can, and be content with that. Avoid anger; if others wrongly obstruct you, defeat their plans if you can. If not, do what you can, and be content with that. But thank your enemies at least a little for drawing out your faculties and strength. Avoid pride; it will blind you to excellence which otherwise you might attain. Try to do well

what you want or have to do, and be content with that. Do it well, if it is only putting your foot to the ground. If you must swear, swear well, and even that will become admirable. "How much must I do?" asked a student, of his teacher. "Oh," replied the professor drily, "Just a little more than you can."

Wishing and Willing. Don't wish. For you cannot both wish and will. Wishing and willing are incompatible.

This can be shown by a very simple argument. Suppose I consider whether I will or will not pick up my pen. I cannot *wish* in this matter. I must decide either to pick it up or to leave it where it is. I know quite well that it weighs only an ounce or two and that I am free and strong enough to pick it up. Therefore I may say; "I will pick it up," or "I will not pick it up." But if I knew or thought that the pen weighed half a ton I might find myself saying: "Oh, I do wish that I could pick up that pen!"

Wishing is an acknowledgment of inability. It is a declaration of dependence upon external events. It is waiting, not working, and wasting time and energy while you wait, and opening the door to every sort of weakness that will spoil you for your opportunities when they come. Wise men do not wish for opportunity, but they wish to be prepared for it.

Willing is the use of your own power; the man of will has no use for wishes, which would waste his time and sap his moral strength. Therefore he does not complain against his environment, does not grumble about the things fortune brings to him through no apparent actions of his own. He is content to make the fullest possible use of what so comes.

It is worth while to meditate upon this matter of not wishing, but willing, until you have made the mood, until you instinctively say, every time that you find yourself wishing: "Stop that; I will not have it!" Dwell a little in thought upon what this change of policy would mean in your life. What would it mean to you when you rise in the morning,

when you eat, when you lie down to sleep? What when you meet your companions, your friends, your so-called enemies? What when you lose your appointment or money, or meet with an accident or fall ill, and your family suffers. Sit down and think over all the disagreeable things that may happen within the next week, and see in each case, what it would mean to you.

You would not wish them to be otherwise. You would say to each of them: "What are you for; what use can I make of you?" You would not sink down and say "I am sorry —," or "I wish——." You would get up and say: "I will——" or "I will not——."

While I am on this subject, let me give a warning against idle thought, which is akin to wishing. It is a great weakness of some to dally in imagination with things which they would hesitate to express in act if opportunity came. Avoid the habit of lying awake in bed and thinking things over before going to sleep, and of lying in a semi-dream state on awakening. Thinking should be done in a positive position and with intention, not in a semi-sleep.

Do not dwell again and again on the same thought or argument. If anything requires to be thought over, bring forward and consider all the facts bearing upon it, arrive at a conclusion, and then dismiss the matter from your mind; and never consider it again unless you can bring some new facts to bear upon it.

If a difficulty arises, do not procrastinate; deal with it completely there and then, and dismiss its further consideration, or appoint a special time for settling it. Do not let anxiety, fear and distress ramble about the mind, poisoning and enfeebling it.

Do not think about what others say about you, except to extract from it the element of truth which is often there. On no-account make the imperfections of others a subject of your meditations. You need your energy and time for your

own work, and besides, dwelling on others' defects tends to develop the same weakness in ourselves.

If the brain is torpid do not eat after dark or sleep after dawn, and take mild exercise and fresh air.

Work and Play. The strong attitude towards life which I have advocated may seem somewhat hard, as filling the day too much with work. But I would say, "Unify work and play." Work need not be toil and drudgery; in fact, its true character is play. Drudgery is merely action; it does not create the man who does it. But the least bit of work done well, done heartily, done better than ever before, feels good, is good, and leads to good. If, in writing a letter, one is at pains to do it neatly, even beautifully, and to express oneself briefly, clearly and gracefully, one has developed hand, eye and brain, thought-power, love-power, and will-power, and that means more life for the future. But if you do it with your eye on the future and not because you like it in the doing, you will lose much of the savour and the benefit.

Also, if you can help it, do not work too much. There is no sense in overwork. The man who does it achieves less than he who knows how to measure his strength. All our work ought to create new strength in us so that to-morrow will be better than to-day. Work that is so hard or prolonged that it leaves us weaker to-morrow is no true work at all, but waste.

In the ideal, all work would be play. "Consider the lilies of the field; they toil not, neither do they spin."

Some people go to the extreme and convert play into work. If you practise, let the practice also be play, or the thought of the future may spoil the present, and that in turn spoil the hoped-for future, causing you to fall short of full success. It is related of Paderewski that when he had already made some appearances in public at the piano, an expert approached him and said: "If you will obey me for two years I will make you the greatest of pianists." He obeyed and practised

exercises constantly without giving himself the pleasure of appearing in public for two years. But I think that during that time he must have delighted in the feeling of growing strength and suppleness in his fingers, and not fixed his gaze too closely on the end of the two years.

No doubt we have to whip ourselves up a bit sometimes, but that is only at the beginning of the journey, when the engine is cold. I knew a lady who used to get out of bed at two in the morning to feed young pups. It was a pull, no doubt, but I believe a bright spot in her life, though probably she never analysed it as such.

There are many occasions of pleasure as well as profit lost to the man who keeps his eye glued too closely on the future. To him a long journey, for example, may be a misery, as he is thinking only of what he will do or receive at the end of it. Another finds a thousand things of interest on the way—the scenery, the people, the train itself; for him the journey is a happy holiday. And in the end he has accomplished much more than the other man.

I have long admired the Hindus for their capacity to enjoy the journey of life. The Hindu villager lives very near to nature, and shows us a sample of man growing as the flower grows. A man will set out from his village to collect the mail from the post office or to dispatch some letters there, perhaps many miles away. He does not tramp along stolidly and painfully, jarring his nerves with the graceless movements that spring from a discontented or impatient mind. The vision of his mail is not a mania that shuts out all other interests, and makes him curse the length of the track. No, there are insects, birds, flowers, trees, streams, clouds in the sky, fields, houses, animals and people, and lastly the blessed earth itself, to lie on which for a while is to be in paradise.

On the other hand, do not be always seeking novelty as such. People seek novelty because their own shallow powers

of thought soon exhaust the surface possibilities of familiar things. It is a step beyond that to have a prevailing purpose and mood. It is a step farther still to be full of a purpose and yet awake to the value of all things by the way.

In conclusion, remember the Hindu proverbs—

If you want a light, what is the good of merely talking about a lamp?

If you are sick, can you cure your disease simply by calling out the names of medicines?

Hidden treasure does not reveal itself by your simply commanding: "Come out!" You must find the place, remove the stones, and dig.

CHAPTER XXV

BODILY AIDS

THERE are many very excellent exercises for the purpose of keeping the body fit. Some of them are positively necessary for the student who is inclined to be sedentary. The effect of the mind on the bodily functions cannot safely be ignored by anyone who takes up mental training. In concentration of mind, for example, there is a tendency to halt the breath outside the body; I know one student who was occasionally recalled to the fact that he had forgotten to breathe in by suddenly choking. So a few suitable breathing exercises will not be out of place in this book.

On the other hand, the restlessness of the body sometimes spoils our mental work. So for the successful practice of concentration it is desirable to train the body to remain quiet.

People who are mentally disposed are often inclined to be somewhat nervous. Therefore a little attention in this connexion may also be in place here. And finally, control of the senses, so that you can curb their restlessness and turn your attention away from their messages at will, is also a useful accomplishment.

I will therefore offer the student a few exercises along these lines.

Stillness. Perhaps you have never sat for a few minutes without moving. Try it now. Try to sit quite still for five or ten minutes, without supporting the back above the waist, with the eyes closed, without feeling either restless or sleepy.

You will probably be surprised to find in what a variety of ways your body will rebel, and in how many parts of it there will be strange creeping and twitching feelings. As

a remedy for this I recommend the following standing exercise :

Go into a room where you will not be disturbed, and stand erect, preferably before a long mirror, with a clock or watch in sight. Stand perfectly still for five minutes. The eyes may blink ; no attention need be paid to them. The body must not be allowed to sway, nor the fingers to twitch ; and no notice must be taken of any slight sensations. The mind may occupy itself in thinking in turn of the different parts of the body, and seeing that they are still. Probably the little fingers, or the shoulders, or some other part of the body will ache, but no attention need be paid to them. Practise this for about five minutes daily.

Relaxation. That exercise should be supplemented by the practice of relaxation, intended to relieve tension in the body. To get the feeling of relaxation try the following experiment :

With the right hand hold a book firmly in front of the chest. Raise the left elbow almost as high as the shoulder, and let the left hand and wrist rest on the book, so that the left forearm is about horizontal. By imagination or thought slowly withdraw the energy of the left arm till you feel that there is no life in it, that it is quite relaxed. Then suddenly drop the book. If the left arm *falls* as though lifeless, you have succeeded in relaxing. This experiment will be better done if someone else holds the book for you, and removes it without warning.

Another way of performing this experiment is to stand close to a chest of drawers or other similar object on which you can comfortably rest your arm and hand, from elbow to finger tips. Relax the arm and then step back smartly. If you have relaxed properly the arm will fall inert, by its own weight.

Having thus learned what relaxation feels like, you need not repeat the experiment, but proceed as follows : Lie down flat on your back on the floor or on a board (not on a bed or couch) and try to sink into it, as if it were soft. This will give

you a luxurious feeling of relaxation of the whole body. It is a good plan to stretch the body, then the neck, then let it go loose and relax the body part by part, beginning at the feet and going up to the head. To relax the eyes—an important matter—imagine black. It is good to relax in this manner at night, before going to sleep.

As an extreme measure, if necessary, one may learn relaxation by sleeping for a few nights on a table, with only a sheet between the body and the board, that is, with nothing to soften the surface. It is possible to go to sleep in a soft bed without being relaxed, but it is not so easy to do so on a board. On the hard surface you *must* relax in order to be comfortable. Then, when you know what the mood of relaxation is like, and you can do it at will, it will be permissible to revert to the soft bed.

Stretching and Bending Exercises. To the standing and relaxing exercises the following stretching and bending exercises may be added, for general health—

Stand with the heels together; raise the hands above the head; bend forward to touch the toes without bending the knees; return to the upright position, reaching as high as possible, standing on the toes.

Stand with the hands at the sides, palms inwards; lean over slowly to one side until the hand sinks below the knee, while the other hand is curled up under the armpit; slowly swing back to the opposite side, stretching the body all the time.

Perform these exercises with an even movement and concentrated thought, for about one minute each. Finally stand, raise one foot from the floor by bending the knee; now raise the other and lower the first, and thus run for one minute, without moving along.

Nerve Exercises. Let us now turn to the nerve exercises. These are done either by holding a part of the body still and preventing it from trembling or by moving it very slowly and

evenly. Hold out the hand with the fingers a little apart and watch them intently. They move a little, and you begin to feel a kind of creaking inside the joints. Try to keep them perfectly still by an effort of the will. After a few minutes they begin to tingle, and you may feel a leakage at the ends, as though something were going off. Send this back up the arm and into the body by the will.

Next, stand before a large mirror, and move the arm by imperceptible degrees from the side into a horizontal position in front. It should move without any jerking and so slowly that you can scarcely see it moving.

Again, sit with your back to the light, facing a large object, such as a bookcase. Without moving your head, start at one corner of the object and let your eyes move, without jumping, very slowly round the outline of it and along its prominent lines, back to the original point. These three exercises may take about five minutes each, and should be done on successive days.

Breathing Exercises. I do not recommend elaborate breathing exercises, such as that of breathing in at one nostril and out at the other. Our object is only to learn regular breathing with the full use of the lungs, so that there may be a good habit during study or concentration. So I suggest only the following simple practices:

Draw the breath in slowly and evenly, through both nostrils, while mentally counting eight, or for five seconds; hold it in while counting eight; and breathe out slowly and evenly while counting eight. Repeat this eight times.

While the breath is in the body it should not be held with the throat muscles, but by holding the chest muscles out and the diaphragm down by an act of will. To cork the breath in at the throat is injurious. The whole process should be easy, pleasant and natural.

Gently draw the lungs full of air, and then, holding the breath as before, press the breath down as low as possible

in the body by sinking the diaphragm. Then press the air up into the chest (without raising or moving the shoulders) so that the abdomen goes in. Thus press the air up and down, slowly and deliberately, five or six times, and then slowly and gently breathe out.

Inhale the breath as before, press it down as low as possible, and draw in more air, so that both the lower and the upper parts of the lungs are filled tight. Then suck in and swallow more air through the mouth until you feel slight muscular discomfort. Release the air slowly, from the chest first.

These breathing exercises help to make the body bright and cheerful, and to counteract the natural suspension of breath outside the body which often occurs during strong concentration of mind, as distinguished from the suspension of breath inside the body which accompanies physical effort.

If carried on for too long at one time they tend to inhibit its sensibility.

Pratyahara. I will conclude these exercises by mention of the practice of inattention, known among Indian yogis as *pratyahara*. It is well known that often when we are reading a book, or listening to music, or looking at a beautiful object, we become inattentive to all but that in which we are interested. In all such cases many things are battering on the senses, a person may enter the room and go out again, a tram-car may go howling and screeching and thundering past, but you have not seen or heard. Vibrations from these things entered the eye and ear, and the messages travelled along the nerves to the appropriate centres in the brain, but you did not see or hear because your attention was turned away.

How vibrations of matter in the brain are converted into sense-perceptions in consciousness has always been a mystery to the psychologist, but the theory of knowledge does not concern us at present.

The practical point is that the translation of vibrations

into perceptions is within the power of our will. We can practise deliberate inattention to objects before our eyes. I am writing these words on a bit of paper on a blue writing pad. I find it quite possible to lose sight of the pad as well as my pen, by particular attention to what I am thinking, without turning my eyes away. Similarly it is possible to listen to the ticking of a clock or the sound of the wind in the trees, and then forget them while concentrating on some idea.

I knew a man who used frequently to lecture on platforms on which he was preceded by musical items. If, while waiting for his turn, he wished to reflect upon some point of his lecture, he could turn his attention to it while the music was going on, and deliberately turn it away from the music. The result was that after a moment or two he heard the sounds no more, and was able to examine his ideas as though he had been alone in his room or in the depths of a forest.

And now, reader or student, permit me to wish you full success in the use of this art of mind and memory, and all the good that may follow therefrom.

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